DOCUMENT RESUME

ED 397 285 CE 072 170

TITLE	Mississippi Curriculum Framework for Horticulture Technology Cluster (Program CIP: 01.0601--Horticulture Serv. Op. & Mgmt., Gen.) (Program CIP: 01.0605--Landscaping Op. & Mgmt.). Postsecondary Programs.
INSTITUTION	Mississippi Research and Curriculum Unit for Vocational and Technical Education, State College.
SPONS AGENCY	Mississippi State Dept. of Education, Jackson. Office of Vocational and Technical Education.
PUB DATE	30 Jul 96
NOTE	121p.; For related documents, see CE 072 162-231.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Agricultural Education; Agricultural Production; Behavioral Objectives; Careers; Community Colleges; Competence; *Competency Based Education; Core Curriculum; Educational Equipment; *Greenhouses; *Horticulture; *Landscaping; Leadership; Nurseries (Horticulture); Plant Growth; Plant Identification; Plant Propagation; Plants (Botany); State Curriculum Guides; Statewide Planning; Technical Institutes; *Turf Management; Two Year Colleges; Vocational Education
IDENTIFIERS	Mississippi

ABSTRACT

This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for the course sequences in the horticulture technology programs cluster. Presented in the introductory section are a framework of programs and courses, description of the programs, and suggested course sequences for horticulture technology and landscape management technology. Section I lists baseline competencies for the program. Section II consists of the curriculum guides for these courses in the horticulture cluster: horticulture/landscape management core courses, horticulture courses, landscape management courses, related vocational-technical courses, and related academic courses. Each course outline contains some/all of the following: course name and abbreviation; course classification; course description; prerequisites; and competencies and suggested objectives. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 397 285

Mississippi Curriculum Framework for Horticulture Technology Cluster

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

P. Lee Walker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Postsecondary
Vocational and Technical Education
1996

CE 072 170

BEST COPY AVAILABLE

July 30, 1996

MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

HORTICULTURE CLUSTER

(PROGRAM CIP: 01.0601 – Horticulture Serv. Op. & Mgmt., Gen.)
(PROGRAM CIP: 01.0605 – Landscaping Op. & Mgmt.)

POSTSECONDARY PROGRAMS 1996

July 30, 1996

Direct inquiries to:

Program Coordinator
Agriculture Education
Office of Vocational and Technical Education
Mississippi Department of Education
P. O. Box 771
Jackson, MS 39205
(601) 359-3460

For copies of this publication, contact:

Research and Curriculum Unit
Mississippi State University
P. O. Drawer DX
Mississippi State, MS 39762
(601) 325-2510

Published by the:

Office of Vocational and Technical Education
Mississippi Department of Education
Jackson, Mississippi

Research and Curriculum Unit for Vocational and Technical Education
College of Education
Mississippi State University
Mississippi State, Mississippi

1996

Mississippi State University does not discriminate on the basis of race, color, religion, national origin, sex, age, handicap/disability, or veteran status.

FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.

- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.

- Classification - Courses may be classified as:
  - Vocational-technical core - A required vocational-technical course for all students.
  - Vocational-technical elective - An elective vocational-technical course.
  - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
  - Academic core - An academic course which is required as part of the requirements for an Associate degree.

- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.

- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours — Math/Science Elective
  - 3 semester credit hours — Written Communications Elective
  - 3 semester credit hours — Oral Communications Elective
  - 3 semester credit hours — Humanities/Fine Arts Elective
  - 3 semester credit hours — Social/Behavioral Science Elective

  It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
  - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
  - students who cannot demonstrate mastery of this content will be given the opportunity to do so.

- The roles of the Baseline Competencies are to:
  - Assist community/junior college personnel in developing articulation agreements with high schools, and
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts

- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

ACKNOWLEDGEMENTS

Writing Team

Margaret Collins, Jones Junior College
Martha Hill, Hinds Community College
Scott Kolle, Mississippi Delta Community College
Bryan Ladner, West Harrison Occupational Training Center
X. Earl McCoy, Mississippi Gulf Coast Community College
Allan Sullivan, Mississippi Gulf Coast Community College
Duke Sutherland, Mississippi Gulf Coast Community College
James Tidwell, Northeast Mississippi Community College

Team Leader

Ronda Cummings, Research and Curriculum Specialist

OVTE Staff

Tom Maxwell, Program Specialist, Agriculture Education

Reviewers

Educators:
L. Gail Barton
Arthur Beasley
Martha G. Hill
Davis Scott Kolle
James Tidwell

Practitioners:
Jackie Fratesi
John Kynard
Kay Morgan
Cynthia Rahaim

Technical Committee

Bill Brand
George Brunt
Windell Carter
Jackie Courson
W.D. Craft
W.B. Jones
Cornell Ladner
Glenmore C. Powell
Ruby Rankin
Ray Reynold
Donald Robohm
David A. Smith

TABLE OF CONTENTS

Page

FOREWORD iii

ACKNOWLEDGEMENTS vii

FRAMEWORK OF PROGRAMS AND COURSES 1

HORTICULTURE TECHNOLOGY PROGRAM DESCRIPTION 3

HORTICULTURE TECHNOLOGY SUGGESTED COURSE SEQUENCE 4

LANDSCAPE MANAGEMENT TECHNOLOGY PROGRAM DESCRIPTION 6

LANDSCAPE MANAGEMENT TECHNOLOGY
SUGGESTED COURSE SEQUENCE 7

SECTION I: BASELINE COMPETENCIES FOR
HORTICULTURE CLUSTER 9

SECTION II: CURRICULUM GUIDE FOR
HORTICULTURE CLUSTER 21

Horticulture/Landscape Management Core Courses 23
Plant Materials I 25
Horticulture Principles 26
Plant Materials II 27
Landscape Design I 28
Ornamental and Turf Pest Management 29
Landscape Maintenance and Weed Control 31
Leadership Management 33
Special Problems in Horticulture/Landscape
Management Technology 34
Work-Based Learning in Horticulture/Landscape
Management Technology 35

Horticulture Courses 37
Greenhouse and Nursery Production I 39
Applied Principles of Plant Propagation 41
Greenhouse and Nursery Production II 43
Landscape Equipment Operation and Maintenance 45
Floral Design 47

Garden Center Management 49
Landscape Construction 51
Landscape Design II 52

Landscape Management Courses 53
Turfgrass Management 55
Landscape Business Management 57
Irrigation and Lighting Systems 59

Related Vocational-Technical Courses 63
Fundamentals of Microcomputer Applications 65
Applied Business Math 67
Marketing I 68
Advertising 69
Applied Soils-Conservation and Use 70
Applied Principles of Plant Production 72
Elementary Surveying 74
Business Accounting 75
Computerized Accounting 76
Fundamentals of Drafting 77
Professional Development 79

Related Academic Courses 81
Business Math 83
Introduction to Business 84
Business Law 85
Botany 86
Plant Science 87
Engineering Drawing I 88
Principles of Economics (Macroeconomics) 89
Freehand Drawing 90

SECTION III: RECOMMENDED TOOLS AND EQUIPMENT 91

APPENDIX A: RELATED ACADEMIC TOPICS A-1

APPENDIX B: WORKPLACE SKILLS B-1

APPENDIX C: STUDENT COMPETENCY PROFILE C-1

Horticulture Technology C-3
Landscape Management Technology C-7

July 30, 1996

FRAMEWORK OF PROGRAMS AND COURSES

	Horticulture Technology	Landscape Management Technology
Horticulture/Landscape Management Core Courses		
Plant Materials I (HLT 1114)	X	X
Horticulture Principles (HLT 1222)	X	X
Plant Materials II (HLT 1124)	X	X
Landscape Design I (HLT 1513)	X	X
Ornamental and Turf Pest Management (HLT 2813)	X	X
Landscape Maintenance and Weed Control (HLT 2124)	X	X
Leadership Management (HLT 1411, HLT 1421, HLT 1431, HLT 1441)	E	E
Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)]	E	E
Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)]	E	E
Horticulture Courses		
Greenhouse and Nursery Production I (HLT 1313)	X	
Applied Principles of Plant Propagation (HLT 1213)	X	
Greenhouse and Nursery Production II (HLT 2323)	X	
Landscape Equipment Operation and Maintenance (HLT 1614)	E	X
Floral Design (HLT 2413)	E	
Garden Center Management (HLT 2513)	E	E
Landscape Construction (HLT 2713)	E	X
Landscape Design II (HLT 2523)	E	X
Landscape Management Courses		
Turfgrass Management (HLT 2113)		X
Landscape Business Management (HLT 2313)		X
Irrigation and Lighting Systems (HLT 2824)		X

Related Vocational-Technical Courses

Fundamentals of Microcomputer Applications (CPT 1113)	X	E
Applied Business Math (BOT 1313)	E	E
Marketing I (MMT 1113)	E	
Advertising (MMT 1323)	E	E
Applied Soils-Conservation and Use (AGT 1714)	E	X
Applied Principles of Plant Production (AGT 1313)	E	
Elementary Surveying (DDT 1413)		E
Business Accounting (BOT 1433)		E
Computerized Accounting (BOT 2413)		E
Fundamentals of Drafting (DDT 1114)		E
Professional Development (BOT 1213)		E

Related Academic Courses

Business Math (BAD 1313)	E	E
Introduction to Business (BAD 1113)	E	
Business Law (BAD 2413)	E	E
Botany (BIO 1314)	E	
Plant Science (AGR 1313)	E	
Engineering Drawing I (GRA 1112)	E	
Principles of Economics (Macroeconomics) (ECO 2113)	E	
Freehand Drawing (ART 1313)		E

PROGRAM DESCRIPTION

HORTICULTURE TECHNOLOGY

Horticulture Technology is an instructional program that prepares individuals to produce, process, and market plants, shrubs, and trees used principally for ornamental, recreational, and aesthetic purposes and to establish, maintain, and manage horticultural enterprises such as arboriculture, floriculture, greenhouse operation and management, landscape management, nursery operation and management, and turf management. Included is instruction in machinery and equipment necessary for each horticultural enterprise.

Certificate programs in Horticulture Technology require a minimum of 32 semester hours credit beyond the baseline competencies with a maximum of six semester credit hours taken in the academic core courses. Technical programs in Horticulture require a minimum of 64 semester credit hours.

HORTICULTURE TECHNOLOGY

SUGGESTED COURSE SEQUENCE*

Baseline Competencies for Horticulture Cluster**

FIRST YEAR

3 sch	Written Communication	4 sch	Plant Materials II (HLT 1124)
	Elective	3 sch	Greenhouse and Nursery
4 sch	Plant Materials I (HLT 1114)		Production I (HLT 1313)
3 sch	Approved Elective**	3 sch	Applied Principles of Plant
2 sch	Horticulture Principles		Propagation (HLT 1213)
	(HLT 1222)	3 sch	Fundamentals of
3 sch	Math/Science Elective		Microcomputer Applications
			(CPT 1113)
15 sch		3 sch	Humanities/Fine Arts
			Elective
		3 sch	Approved Elective**
		19 sch	

SECOND YEAR

3 sch	Landscape Design I	3 sch	Approved
	(HLT 1513)		Business/Marketing Elective†
3 sch	Greenhouse and Nursery	3 sch	Ornamental and Turf Pest
	Production II (HLT 2323)		Management (HLT 2813)
3 sch	Approved Elective	4 sch	Landscape Maintenance and
3 sch	Social/Behavioral Science		Weed Control (HLT 2124)
	Elective	3 sch	Approved Elective**
3 sch	Approved	3 sch	Oral Communication Elective
	Business/Marketing Elective†		
15 sch		16 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the high school Horticulture program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

† Approved Business/Marketing Electives: Applied Business Math (BOT 1313); Business Math (BAD 1313); Marketing I (MMT 1113); Advertising (MMT 1323); Introduction to Business (BAD 1113); Business Law (BAD 2413).

APPROVED ELECTIVES

Written Communications
Applied Soils-Conservation and Use (AGT 1714)
Applied Business Math (BOT 1313)
Business Math (BAD 1313)
Introduction to Business (BAD 1113)
Marketing I (MMT 1113)
Business Law (BAD 2413)
Botany (BIO 1314)
Plant Science (AGR 1313)
Landscape Equipment Operation and Maintenance (HLT 1614)
Floral Design (HLT 2413)
Garden Center Management (HLT 2513)
Landscape Construction (HLT 2713)
Advertising (MMT 1323)
Landscape Design II (HLT 2523)
Engineering Drawing I (GRA 1112)
Principles of Economics (Macroeconomics) (ECO 2113)
Applied Principles of Plant Production (AGT 1313)
Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)]
Leadership Management (HLT 1411, HLT 1421, HLT 1431, HLT 1441)
Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)]

(Note: Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)] and Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)] may be offered in the summer semester.)

LANDSCAPE MANAGEMENT TECHNOLOGY

PROGRAM DESCRIPTION

The Landscape Management Technology program is an instructional program that prepares individuals to locate, plant, and maintain turf, trees, shrubs, ground cover, vines, annuals, perennials, and other landscape features.

Certificate programs in Landscape Management Technology require a minimum of 32 semester credit hours beyond the baseline competencies with a maximum of six semester credit hours taken in the academic core courses. Technical programs in Landscape Management Technology require a minimum of 65 semester credit hours above the essential skills with a minimum 15 semester credit hour academic core. Students who complete the Associate degree program are qualified for licensing examinations held by the Division of Plant Industry, Mississippi Department of Agriculture and Commerce. Licenses are issued for landscape gardening ornamental pest or disease control, ornamental and turf weed control and tree surgery. These licenses are required for persons engaging in these activities in Mississippi. Students completing the certificate program are eligible to sit for the examinations.

LANDSCAPE MANAGEMENT TECHNOLOGY

SUGGESTED COURSE SEQUENCE*

Baseline Competencies for Horticulture Cluster**

FIRST YEAR

4 sch	Plant Materials I (HLT 1114)	4 sch	Plant Materials II (HLT 1124)
4 sch	Landscape Equipment Operation and Maintenance (HLT 1614)	3 sch	Landscape Design II (HLT 2523)
3 sch	Landscape Design I (HLT 1513)	4 sch	Applied Soils-Conservation and Use (AGT 1714)
2 sch	Horticulture Principles (HLT 1222)	3 sch	Approved Elective†
3 sch	Math/Science Elective	3 sch	Written Communication Elective
16 sch		17 sch	

SECOND YEAR

3 sch	Landscape Construction (HLT 2713)	4 sch	Landscape Maintenance and Weed Control (HLT 2124)
3 sch	Ornamental and Turf Pest Management (HLT 2813)	3 sch	Landscape Business Management (HLT 2313)
3 sch	Turfgrass Management (HLT 2113)	4 sch	Irrigation and Lighting Systems (HLT 2824)
6 sch	Approved Elective†	3 sch	Humanities/Fine Arts Elective
3 sch	Oral Communication Elective	3 sch	Social/Behavioral Science Elective
18 sch		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the high school Horticulture program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

† APPROVED ELECTIVES
Elementary Surveying (DDT 1413)
Business Accounting (BOT 1433)
Computerized Accounting (BOT 2413)

Applied Business Math (BOT 1313)
Business Math (BAD 1313)
Fundamentals of Microcomputer Applications (CPT 1113)
Fundamentals of Drafting (DDT 1114)
Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)]
Freehand Drawing (ART 1313)
Garden Center Management (HLT 2513)
Advertising (MMT 1323)
Business Law (BAD 2413)
Professional Development (BOT 1213)
Leadership Management (HLT 1411, HLT 1421, HLT 1431, HLT 1441)
Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)]

(Note: Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)] and Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)] may be offered in the summer semester.)

SECTION I:

BASELINE COMPETENCIES

BASELINE COMPETENCIES FOR HORTICULTURE CLUSTER

The following competencies and suggested objectives are taken from the publication *Mississippi Curriculum Framework for Horticulture*. These competencies and objectives represent the baseline which was used to develop the community/junior college Horticulture and Landscape Management courses. Students enrolled in postsecondary courses should either (1) have documented mastery of these competencies, or (2) be provided with these competencies before studying the advanced competencies in the Horticulture and Landscape Management programs.

Baseline competencies may be integrated into existing courses in the curriculum or taught as special "Introduction" courses. The "Introduction" courses may be taught for up to six semester hours of institutional credit and may be divided into two courses. If the Baseline Competencies are to be taught as "Introduction" courses, each course should be at least 3 credit hours. The following course number(s) and description should be used:

Course Name(s): Introduction to Horticulture Cluster, Introduction to Horticulture Cluster I, or Introduction to Horticulture Cluster II

Course Abbreviation(s): HLT 100(3-6), HLT 1013, HLT 1023

Classification: Vocational-Technical Core

Description: These courses contain the baseline competencies and suggested objectives from the high school Horticulture curriculum which directly relate to the community college Horticulture and Landscape Management programs. The courses are designed for students entering the community college who have had no previous training or documented experience in the field. (3-6 semester hours based upon existing skills for each student. May be divided into 2 courses for a maximum total of 6 hours of institutional credit.)

Competencies and Suggested Objectives:

1. Identify careers in the horticulture industry.
   a. Describe the major divisions of the horticulture industry, including olericulture, pomology, floriculture, and landscaping.
   b. Describe career opportunities in the horticulture industry in relation to work skills, working conditions, and educational requirements.
   c. Identify job seeking skills required in the horticulture industry, including writing a letter of application, completing a job application, and developing a resume.

Related Academic Topics (See Appendix A): C4, C6
Workplace Skills (See Appendix B): WP2, WP3

2. Identify school and program policies and procedures related to the horticulture program.
   a. Describe school policies related to the horticulture program.
   b. Describe program policies related to the horticulture program, including general safety practices to follow in the horticulture facility.

   Related Academic Topics (See Appendix A): C4, C6
   Workplace Skills (See Appendix B): WP2, WP4
3. Identify and describe the role of organizations that encourage leadership development.
   a. Identify and describe the role of student youth organizations that encourage leadership development.
   b. Identify and describe the role of trade organizations in horticulture that encourage leadership development.

   Related Academic Topics (See Appendix A): C4, C6
   Workplace Skills (See Appendix B): WP2, WP3
4. Identify parts of a plant and their functions.
   a. Identify the primary parts of a plant and describe the function of each part, including roots, stems, leaves, and flowers.
   b. Identify the various types of each primary part and discuss the differences in each type.

   Related Academic Topics (See Appendix A): S2, S5, S7
   Workplace Skills (See Appendix B): WP2
5. Describe the growth process in plants.
   a. Describe processes by which plants grow including photosynthesis, respiration, transpiration, and translocation.
   b. Describe the relationship of environmental and cultural factors to plant growth (water, light, temperature, soil, climatic zones, etc.).

   Related Academic Topics (See Appendix A): S2, S5, S7
   Workplace Skills (See Appendix B): WP2
6. Apply systems of plant classification.
   a. Compare the different systems of plant classification according to life cycle (annual, biennial, and perennial); leaf cycle (evergreen and deciduous); and seed leaf number (monocot and dicot).
   b. Describe the use of the binomial system in classifying plants including common and scientific names.
   c. Demonstrate the use of the binomial system to classify a common plant by genus and species.

   Related Academic Topics (See Appendix A): S3, S8, C1, C6
   Workplace Skills (See Appendix B):WP2, WP4, WP6
7. Describe and apply principles of plant growth media.
   a. Describe the characteristics and components of soil.
   b. Describe the characteristics of a suitable growing media.

c. Differentiate between a soil and soil-less medium.
d. Identify the components used in mixing a soil-less medium.
e. Prepare a growing media to specifications.

Related Academic Topics (See Appendix A): M4, S4, S5
Workplace Skills (See Appendix B): WP2

8. Describe and apply basic principles of plant nutrition.
   a. Identify the major nutrients needed for plant growth and describe their effects on plant growth.
   b. Identify the minor nutrients needed for plant growth and describe their effects on plant growth.
   c. Describe the effect of soil pH on nutrient availability and plant growth.
   d. Demonstrate the procedure for obtaining a soil sample for nutrient and pH testing.
   e. Determine the pH of a soil or medium.
   f. Interpret results of a soil test to determine the correct amount of amendments to be applied to a given area of soil or medium.

   Related Academic Topics (See Appendix A): S4, S5
   Workplace Skills (See Appendix B): WP2
9. Describe the characteristics and features of different types of greenhouses.
   a. Identify and compare the different styles of greenhouses (Quonset, Gothic, lean-to, A-frame, etc.).
   b. Identify and compare the different types of greenhouse frames (metal, wood, plastic/PVC, etc.) and coverings (fiberglass, glass, polyethylene, lexon, etc.).
   c. Identify and compare the different types of heating, cooling, and ventilation systems used in greenhouses.
   d. Identify and compare the types of irrigation and chemigation systems used in greenhouses.
   e. Identify and describe factors to consider in establishing a floor plan for a greenhouse including benching, flooring, and traffic patterns.
   f. Describe sanitation practices employed in greenhouse production.

   Related Academic Topics (See Appendix A): C2, C6, M5, S5, S6
   Workplace Skills (See Appendix B): WP2, WP6
10. Describe auxiliary structures associated with horticulture.
   a. Describe the functions of auxiliary structures associated with horticultural operations including lathe houses, cold frames, shade houses, hot beds, potting facilities, chemical and dry storage facilities, etc.

   Related Academic Topics (See Appendix A): C6, S6
   Workplace Skills (See Appendix B): WP2
11. Distinguish between sexual and asexual propagation methods.
   a. Describe the distinguishing characteristics of sexual and asexual propagation methods and discuss how these are used by horticulturists in reproducing and breeding plants.

Related Academic Topics (See Appendix A): C6, S2
Workplace Skills (See Appendix B): WP2, WP6

12. Describe and apply principles of sexual reproduction.
    a. Describe the sexual reproductive process in plants.
    b. Identify the parts of a seed and describe their functions.
    c. Propagate plants from seed.
    d. Conduct a seed germination test.

    Related Academic Topics (See Appendix A): S2, M6
    Workplace Skills (See Appendix B): WP2, WP6
13. Describe and apply principles of asexual reproduction.
    a. Identify the common types of asexual reproduction and discuss their applications in horticulture.
    b. Identify common tools used in asexual reproduction and demonstrate their safe care and use.
    c. Propagate plants from root, stem, and leaf cuttings.
    d. Propagate plants by division/separation.
    e. Propagate plants by layering.

    Related Academic Topics (See Appendix A): S2, S7
    Workplace Skills (See Appendix B): WP2
14. Identify common pests and describe the ways in which they cause damage to horticultural crops.
    a. Identify common insect pests of horticultural crops and describe how each causes damage to the crop.
    b. Identify common diseases of horticultural crops and describe how each causes damage to the crop.
    c. Identify common weeds found in horticultural crops and describe how weeds cause damage to crops.
    d. Describe requirements for plant pest control certification/licensure.

    Related Academic Topics (See Appendix A): C2, S2
    Workplace Skills (See Appendix B): WP2, WP6
15. Identify and apply pest management and control methods.
    a. Identify and describe the use of biological control methods including use of beneficial insects, resistant varieties, repellant plants, etc.
    b. Identify and describe the use of cultural control methods including sanitation, mechanical practices, crop rotation, etc.
    c. Identify and describe the use of chemical control methods including herbicides, insecticides, fungicides, etc.
    d. Identify the different types of chemical formulations including dusts, wetable powders, emulsions, granules, concentrated liquids, aerosols and fumigants, stickers and spreaders, etc.
    e. Identify common names and trade names for chemicals frequently used in horticulture including insecticides, herbicides, and fungicides.
    f. Interpret information found on a chemical label.

g. Demonstrate safe, approved procedures for handling, storing, mixing, applying, and disposing of chemicals and chemical containers.

Related Academic Topics (See Appendix A): C1, C2, C4, M4, S2
Workplace Skills (See Appendix B): WP2, WP6

16. Describe and apply basic principles of floristry.
    a. Describe career opportunities in floristry ranging from owner-operator to designer and salesperson.
    b. Demonstrate the safe and proper use of tools and supplies used in floristry including shears, tape, foam, floral wire, etc.
    c. Identify plant materials used in floristry including flower and foliage materials.
    d. Demonstrate the procedures for receiving and storing (including rotation of inventory) floral materials.
    e. Describe basic design principles including balance, transition, rhythm, focal point, proportion, scale, etc.
    f. Receive and process orders for floral products.
    g. Create basic floral design products including a packaged single corsage, bud vase, round centerpiece, and a dressed (wrapped) potted plant.

    Related Academic Topics (See Appendix A): C6, M7, S2
    Workplace Skills (See Appendix B): WP2

17. Describe and apply principles of greenhouse crop production.
    a. Identify different types of greenhouse crops (bedding plants, vegetables, flowering plants, foliage plants, etc.) and common species of each type.
    b. Describe cultural considerations for greenhouse crops including fertilizer, water, growing medium, pest control, temperature, natural and chemical growth control and stimulation, and light control for common crops.
    c. Produce a greenhouse crop following accepted commercial practices.

    Related Academic Topics (See Appendix A): C6, S3, M7, S2
    Workplace Skills (See Appendix B): WP2, WP4, WP5

18. Describe and apply principles of olericulture production.
    a. Describe characteristics of common vegetables grown for commercial production including cultural requirements, seed versus transplant planting, plant growth style, growing season, etc.
    b. Identify and demonstrate the use of common tools and equipment used in gardening including tillers, spreaders, sprayers, watering devices, rakes, hoes, shovels, etc.
    c. Identify and describe factors to consider in preparing a seedbed including soil class and texture, use of soil amendments, and characteristics of a properly prepared seedbed.
    d. Develop a plan for an intensive culture garden including crop and variety selection, location and spacing of different crops, scheduling of crops, and harvesting and marketing of crops.
    e. Describe cultural practices associated with growing of vegetables including fertilization, integrated pest control measures, and irrigation.

f. Identify common garden pests including insects, diseases, and weeds.
g. Produce a vegetable crop.

Related Academic Topics (See Appendix A): C6, S2, S3, S4
Workplace Skills (See Appendix B): WP2, WP4, WP6

19. Describe and apply principles of interior plantscaping.
    a. Describe careers in interior plantscaping.
    b. Define interior plantscaping and discuss its importance.
    c. Describe factors to consider in selecting plants for interior plantscaping.
    d. Identify plants for specific locations in plantscaping.
    e. Describe cultural procedures for interior plantscapes including fertilization, watering, sanitation, and pest control.
    f. Plan, construct, and maintain an interior plantscape.

    Related Academic Topics (See Appendix A): C6, S2, S6
    Workplace Skills (See Appendix B): WP2, WP6
20. Investigate career and educational opportunities in horticulture.
    a. Prepare a comprehensive report on a career in a chosen occupational area based on research and observations.
    b. Develop a plan for post-high school activities (education, employment, entrepreneurship, etc.).
    c. Utilize electronic communication (Internet or e-mail, if available) to obtain occupational information.

    Related Academic Topics (See Appendix A): C6
    Workplace Skills (See Appendix B): WP2, WP3, WP6
21. Review program policies and procedures.
    a. Review program operation policies and procedures, including general safety procedures.

    Related Academic Topics (See Appendix A): C6
    Workplace Skills (See Appendix B): WP2, WP6
22. Identify and describe the use of major plants used associated with nursery and landscape operations.
    a. Identify and describe the use of major nursery plants including trees, shrubs, ground covers, vines, and ornamental grasses.
    b. Identify and describe the use of major flowering plants including annuals, biennials, and perennials.
    c. Identify and describe the use of major water plants.
    d. Identify and describe the use of major foliage plants used in nursery and landscape operations.
    e. Identify and describe the use of wildflowers in landscape operations.

    Related Academic Topics (See Appendix A): S2
    Workplace Skills (See Appendix B): WP2
23. Describe and apply advanced plant propagation methods.
    a. Propagate plants by grafting.
    b. Propagate plants from scarified or stratified seeds.
    c. Propagate plants by tissue culture.

Related Academic Topics (See Appendix A): S2, S7
Workplace Skills (See Appendix B): WP2

24. Describe and apply marketing and business practices associated with horticulture operations.
    a. Develop a yearly schedule of activities/enterprises for a horticulture business.
    b. Describe factors to consider in ordering materials/supplies for an enterprise.
    c. Describe factors to consider in pricing products of an enterprise.
    d. Describe factors to consider in marketing and advertising products.
    e. Complete a sales transaction including providing customer service and completing a sales ticket.

    Related Academic Topics (See Appendix A): C4, C6, M1, M7
    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6
25. Describe and apply principles of container and field crop production.
    a. Describe advantages and disadvantages of container crop production.
    b. Describe factors to consider in selecting a site for container and field crop production.
    c. Describe factors to consider in selecting a container for production.
    d. Identify and demonstrate the safe use of tools and equipment for container and field crop production.
    e. Describe cultural requirements for container and field crop production including fertilizer, water, pest control, and harvesting procedures.
    f. Produce container and field grown plants.
    g. Describe automation and plug production in the nursery industry.

    Related Academic Topics (See Appendix A): C6, M7, S2, S4
    Workplace Skills (See Appendix B): WP2, WP6
26. Describe and apply principles of floral crop production.
    a. Develop growing plans and schedules for a fall and a spring floral crop.
    b. Describe optimum production practices for flower crops to include benches and media, shading/light requirements, temperature, water, fertilizer, and pest control practices.
    c. Produce a specialty flower crop.

    Related Academic Topics (See Appendix A): C6, S2
    Workplace Skills (See Appendix B): WP1, WP2, WP6
27. Describe and apply principles of landscape design
    a. Describe careers in the landscape design field.
    b. Identify and demonstrate the use of tools and equipment for landscape design, including computer-assisted landscape design hardware and software.
    c. Identify symbols used in landscape design plans.
    d. Describe principles of design associated with landscaping including simplicity, balance, proportion, etc.
    e. Prepare a site analysis/needs assessment for a given site.

f. Prepare a simple landscape plan to scale for a given site to include plant selection and location.

Related Academic Topics (See Appendix A): C6,
Workplace Skills (See Appendix B): WP1, WP2, WP6

28. Describe and apply basic principles of landscape installation and construction.
    a. Describe essential elements of a landscape installation contract and pricing proposal.
    b. Develop a contract and pricing proposal for the landscape plan developed by the students in Unit 7.
    c. Prepare a planting site, install plants, and provide post-transplant care according to a landscape plan.
    d. Describe licensing requirements for landscape installation.
    e. Demonstrate installation of a landscape irrigation system.

    Related Academic Topics (See Appendix A): C6, M7
    Workplace Skills (See Appendix B): WP1, WP3, WP6
29. Describe and apply principles of landscape maintenance.
    a. Discuss skills required for year-round landscape maintenance.
    b. Identify and demonstrate the safe use of equipment for landscape maintenance including saws, pruning shears, string trimmers, hedge trimmers, blowers, etc.
    c. Determine fertilizer and pest control needs of trees, shrubs, and beds.
    d. Develop a year-round schedule and cost estimate for maintenance of trees, shrubs, and beds.
    e. Maintain trees, shrubs, and beds according to the year-round schedule.
    f. Demonstrate maintenance of a landscape irrigation system.
    g. Describe elements of a contract and warranty agreement for landscape maintenance.

    Related Academic Topics (See Appendix A): C6, S2
    Workplace Skills (See Appendix B): WP1, WP2, WP6
30. Describe and apply principles of turfgrass installation.
    a. Describe factors to consider in selecting a turfgrass for a specific area.
    b. Identify varieties of turfgrass and describe their characteristics.
    c. Describe installation practices for different turfgrasses, including site preparation and initial care.
    d. Develop a plan and cost estimate for establishing turf.

    Related Academic Topics (See Appendix A): C6, S2, M7
    Workplace Skills (See Appendix B): WP1, WP2, WP6
31. Describe and apply principles of turfgrass maintenance.
    a. Identify and demonstrate the safe use of equipment and tools used for turfgrass maintenance including mowers, dethatchers, aerators, etc.
    b. Perform preventive maintenance on small gasoline engine power equipment such as changing oil and filters, mixing gasoline and oil for two-cycle engines, servicing the engine, etc.

c. Identify common pests of turfgrass including insects, diseases, and weeds.
d. Mow turf to correct height for a specific grass.
e. Calibrate equipment and apply fertilizer to turf in correct proportions.
f. Calibrate equipment and apply herbicides, pesticides, and other pest control chemicals in correct proportions.
g. Describe common irrigation methods for turfgrass.
h. Perform repair/renovation practices including aeration and dethatching.
i. Develop a plan/cost estimate for a turfgrass management program.

Related Academic Topics (See Appendix A): C6, M7, S2, S6
Workplace Skills (See Appendix B): WP1, WP2, WP6

32. Describe and apply principles of fruit and berry production.
    a. Identify common fruits and berries produced in Mississippi and discuss general cultural practices.
    b. Prepare a site and install fruit or berry plants.
    c. Provide cultural care for fruit or berry plants to include pruning, fertilizing, pest control, and harvesting.
    d. Describe marketing of fruits and vegetables.

    Related Academic Topics (See Appendix A): S2
    Workplace Skills (See Appendix B): WP2, WP6
33. Apply advanced principles of floral design.
    a. Prepare a wire order for a floral arrangement.
    b. Receive a wire order for a floral arrangement.
    c. Prepare a window display.
    d. Prepare a funeral spray.
    e. Prepare a nosegay arrangement.
    f. Prepare a dried arrangement.
    g. Prepare a silk arrangement.

    Related Academic Topics (See Appendix A): C3, C6, M7
    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

SECTION II:

CURRICULUM GUIDE

FOR

HORTICULTURE CLUSTER

HORTICULTURE/LANDSCAPE MANAGEMENT COURSES

Course Name: Plant Materials I

Course Abbreviation: HLT 1114

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: A survey of common ornamental plants used in landscaping including deciduous and evergreen trees, shrubs, vines, ground covers, and annual and perennials. Includes instruction in basic classification and identification procedures and in identifying characteristics, maintenance, and use of the plants in a horticulture setting. This course is designed to be offered in the fall semester. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate an understanding of identifying and classifying plant materials.
   a. Describe the classification of plants using the Latin system from kingdom to variety and cultivar (if applicable).
   b. Describe the rules for writing proper botanical names of plants including punctuation, capitalization, and spelling.
   c. Describe growth characteristics and leaf shapes of indigenous plants.
   d. Describe the different environmental requirements of plants including the concepts of microclimates and zone hardiness requirements.
   e. Describe the different types of ornamental uses of plants.
   f. Identify a minimum of 100 plants including deciduous and evergreen trees, shrubs, vines, ground covers, and annual and perennials by botanical name and common name.
   g. Describe characteristics, maintenance, propagation, and use of plant materials.
   h. Identify common insects and diseases associated with all plant materials.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C2, M4
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Horticulture Principles

Course Abbreviation: HLT 1222

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: A course designed to provide an overview of current Green Industry events and job opportunities in the industry and specific landscape and horticulture related topics. (2 sch: 2 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate the ability to solve mathematical exercises related to the landscape/horticulture industry.
   a. Identify geometric measurements and complete practice exercises relating to perimeter, area, and volume.
   b. Calculate sales discounts and mark-up pricing procedures.
   c. Calculate area, quantity, and sizes for planting, and area, quantity, and volume of fertilizers and chemicals.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Prepare and complete the necessary processes and forms for job placement.
   a. Prepare a cover letter, resume, job application form, and follow-up letter.
   b. Complete video-taped job interview and review interview techniques demonstrated.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Describe and discuss current events in the Green Industry.
   a. Identify and discuss national, state, and local regulations and laws relating to the green industry.
   b. Identify and review current Green Industry periodicals and publications.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Plant Materials II

Course Abbreviation: HLT 1124

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: A continuation of Plant Materials I with emphasis on foliage and interior and flowering plants. Designed to be taught in the spring semester. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate an understanding of identifying and classifying plant materials.
   a. Describe the classification of plants using the Latin system from kingdom to variety and cultivar (if applicable).
   b. Describe the rules for writing proper botanical names of plants including punctuation, capitalization, and spelling.
   c. Describe growth characteristics and leaf shapes of indigenous plants.
   d. Describe the different environmental requirements of plants including the concepts of microclimates and zone hardiness requirements.
   e. Describe the different types of ornamental uses of plants.
   f. Identify a minimum of 100 plants including deciduous and evergreen trees, shrubs, vines, ground cover, interior plants, annuals, and perennials by botanical name and common name.
   g. Describe characteristics, maintenance, propagation, and use of plant materials
   h. Identify common insects and diseases associated with all plant materials.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Design I

Course Abbreviation: HLT 1513

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: An introduction to the concepts, principles, and elements of landscape design. Includes instruction and practice in the use of drawing instruments and supplies and in conducting a site analysis. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate the use of drawing instruments and supplies used in the preparation of landscape plans.
   a. Complete various drawings using basic drawing instruments and supplies.
   b. Define and apply drawing terms related to plant materials and structures used in the landscape.
   c. Draw standard landscape symbols to scale and use consistent freehand lettering techniques to label drawings.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M5, M1
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Describe and illustrate site inventory and analysis processes and elements and principles of design.
   a. Conduct a site inventory and analysis.
   b. Appraise client needs, preferences, and interests.
   c. Create a basic landscape design plan using basic presentation methods and media and the elements and principles of design.
   d. Utilize landscape design computer software

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M5, M1
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Ornamental and Turf Pest Management

Course Abbreviation: HLT 2813

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: Provides instruction and practice in the identification and control of ornamental turf pests and diseases. Includes instruction in pest identification, pesticide use and safety, and legal aspects of pest control. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe and explain the different types of insects associated with landscape and horticulture plant material.
   a. Identify a minimum of 16 orders of insect phylum and describe the characteristics common to each.
   b. Describe the different life cycles of insects.
   c. Identify and describe the damage caused by insects and state the control methods.
   d. Collect a minimum of 10 orders and 25 insects.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Describe and explain the different types of disease common to ornamental and turf plants.
   a. Identify a minimum of 10 bacterial and fungi diseases.
   b. Describe the different life cycles of diseases.
   c. Identify and describe the damage caused by diseases and state the control methods.
   d. Collect a minimum of 10 diseases common to ornamental and turf plants.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Describe control methods for insects and disease management.
   a. Identify the different pesticide formulations and describe the application procedures.
   b. Describe pesticide safety to include toxicity and health, storage, application procedures, first aid, and the effects on the environment.
   c. Interpret information found on pesticide labels.
   d. Discuss integrated pest management (IPM).
   e. Identify laws and regulations governing pesticide applicators.

f. Apply for and take private/commercial pesticide applicator's certification exam, and ornamental and turf pesticide applicator's exam (Category 3).

Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, S8
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Maintenance and Weed Control

Course Abbreviation: HLT 2124

Classification: Vocational-Technical Core (Horticulture Technology, Landscape Management Technology)

Description: A course to provide instruction and practice in the maintenance of trees, shrubs, and other green scape features. Includes instruction in the use of herbicides and other weed control measures. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe the scope of landscape maintenance.
   a. Describe job opportunities in landscape maintenance and related areas of work.

   Related Academic Topics (See Appendix A): C1, C2, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Identify the proper method and timing of pruning operations for specific trees and shrubs.
   a. Describe storage procedures for hand tools.
   b. Perform routine hand tool maintenance to include oiling, cleaning, and sharpening.
   c. Prune a shrub by thinning.
   d. Prune a shrub by heading back.
   e. Prune a tree to a central leader.
   f. Prune a tree as a multi-stem.
   g. Prune a tree to repair storm damage.
   h. Provide wound care for trees.

   Related Academic Topics (See Appendix A): C1, C2, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Explain the laws and regulations governing licensure.
   a. Describe the laws and regulations of licensure of tree surgeons.
   b. Describe the laws and regulations of licensure of commercial ornamental and turf weed control applicators.

   Related Academic Topics (See Appendix A): C1, C2, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
4. Describe the different types of weeds and herbicides.
   a. Identify weeds and describe their life cycle and developmental stages.
   b. Describe the characteristics of the different types of herbicides.
   c. Describe the practices utilized for weed control.

Related Academic Topics (See Appendix A): C1, C2, C5, M4, S2
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

5. Develop a one-year maintenance schedule for residential and commercial applications.
   a. Plan a maintenance schedule to include routine shrub and tree care, lawn care, fertilization, fixture maintenance, winter care, and plantings including winter grasses, replanting and re-mulching of shrubs, and scheduling of seasonal color.

Related Academic Topics (See Appendix A): C1, C2, C5, M4, S2
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Leadership Management

Course Abbreviation: HLT 1411, HLT 1421, HLT 1431, HLT 1441

Classification: Vocational-Technical Elective (Horticulture Technology, Landscape Management Technology)

Description: This course develops an awareness of interpersonal skills essential for job success. Topics include self-image, team building, leadership skills, time & stress management and human resources management. (1 sch: 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Formulate personal educational and professional goals and develop a plan to accomplish those goals.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Special Problem in Horticulture/Landscape Management Technology

Course Abbreviation: HLT 291(1-3)

Classification: Vocational-Technical Elective (Horticulture Technology, Landscape Management Technology)

Description: A course designed to provide the student with practical application of skills and knowledge gained in other vocational-technical courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-3 sch: 2-6 hr. lab)

Prerequisites: Consent of instructor

Competencies and Suggested Objectives:

1. Prepare a written agreement.
   a. Compile a written training agreement in cooperation with the instructor and student which details work schedule and specific tasks/skills to be mastered in the program.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Prepare a written report of activities.
   a. Compile a daily log of activities and tasks.
   b. Submit weekly reports to the instructor summarizing activities and tasks completed.
   c. Submit a final report of activities and experiences.

   Related Academic Topics (See Appendix A): C1, C2, C4, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP6
3. Follow written guidelines for work experience programs.
   a. Complete all required activities in the training agreement.
   b. Adhere to all written and oral instructions for the supervised experience.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Course Name: Work-Based Learning in Horticulture/Landscape Management Technology

Course Abbreviation: HLT 292(1-6)

Classification: Vocational-Technical Elective (Horticulture Technology, Landscape Management Technology)

Description: This course is a cooperative program between the industry and education and is designed to integrate the student's technical studies with technical experience. Variable credit is awarded on the basis of one semester hour per 45 contact hours. (1-6 sch variable: 3-18 hr. externship)

Prerequisites: Minimum of 12 sch Horticulture related courses or consent of instructor

Competencies and Suggested Objectives:

1. Prepare a written agreement.
   a. Compile a written training agreement in cooperation with the instructor and student which details work schedule and specific tasks/skills to be mastered in the program.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Prepare a written report of activities.
   a. Compile a daily log of activities and tasks.
   b. Submit weekly reports to the instructor summarizing activities and tasks completed.
   c. Submit a final report of activities and experiences.

   Related Academic Topics (See Appendix A): C1, C2, C4, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP6
3. Follow written guidelines for work experience programs.
   a. Complete all required activities in the training agreement.
   b. Adhere to all written and oral instructions for the supervised experience.

   Related Academic Topics (See Appendix A):C1, C2, C3, C4 C5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
4. Apply and practice positive work habits and responsibilities.
   a. Perform assignments to develop positive work habits and responsibilities.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP3
5. Work with instructor and employer to develop written occupational objectives to be accomplished.
   a. Perform written occupational objectives in the work-based learning program.

Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP6

6. Assess accomplishment of objectives.
   a. Prepare daily written assessment of accomplishment of objectives.
   b. Present weekly written reports to instructor in activities performed and objectives accomplished.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP6
7. Utilize a set of written guidelines for the work-based learning program.
   a. Develop and follow a set of written guidelines for the work-based learning program.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP6

HORTICULTURE COURSES

Course Name: Greenhouse and Nursery Production I

Course Abbreviation: HLT 1313

Classification: AOC Core (Horticulture Technology)

Description: A course which develops skills and expertise in the selection, equipping, and management of a greenhouse facility. Emphasis is placed on different media, supplies, and chemicals used in greenhouses and on the scheduling and production of greenhouse crops. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Contrast the types of structures, locations, and equipment used in the greenhouse industry.
   a. Identify the different types of greenhouse and nursery structures and structure coverings, and state the advantages and disadvantages of each.
   b. Describe factors to consider in locating and sizing greenhouse and nursery facilities.
   c. Describe the equipment used to control the different environmental factors that affect greenhouse production.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Explain the process of acclimation of plant materials.
   a. Discuss the concept of acclimation as applied to plant production and the different methods that are used to acclimate plants.
   b. Identify harmful and useful gases found in greenhouses and describe their control.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Produce a plan to illustrate proper watering, lighting, and timing techniques.
   a. Describe the importance of proper watering and chemigation techniques on greenhouse nursery production in terms of frequency, amount, method of application, and economic considerations.
   b. Develop and implement a watering and lighting schedule for a given greenhouse or nursery crop.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

4. Determine principles of media selection.
   a. Describe the characteristics of organic and inorganic components used in soil-less media.
   b. Contrast the advantages and disadvantages of soil and soil-less media.
   c. Adjust the pH of a growing medium to meet the requirements of a specific crop.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
5. Formulate a seeding schedule.
   a. Compare and contrast the advantages and disadvantages of the different methods for starting plants in a greenhouse or nursery including seeds, plugs, liners, and rooted cuttings.
   b. Identify available sources for seeds, plants, media, containers, and other supplies necessary for a greenhouse and nursery operation.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
6. Prepare and complete production schedule for a spring crop.
   a. Develop a crop program for spring production of greenhouse plants to include the selection of plant species to be grown, timing of operations, supplies, marketing, production costs, and spacing for optimum production.
   b. Contrast the differences in greenhouse and nursery crop programming.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
7. Examine seasonal re-plantings of nursery and greenhouse plant materials.
   a. Describe and perform the practice of repotting plants in both greenhouse and nursery operations.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
8. Create appropriate merchandising strategies for crop production.
   a. Develop a marketing plan for a greenhouse or nursery crop to include program evaluation, review techniques, PERT or other charts, scheduling difficulties, costing and pricing of plants, advertising, storing and holding, and shipping.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S4, S8, M5, M7

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Applied Principles of Plant Propagation

Course Abbreviation: HLT 1213

Classification: AOC Core (Horticulture Technology)

Description: A course which develops expertise and knowledge in the advanced asexual methods of plant reproduction including separation and division, grafting, and layering. Includes an introduction to tissue culture methods. (3 sch: 1 hr. lecture, 4 hr. lab).

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe vegetative plant reproduction.
   a. Identify and contrast the different formulations of rooting hormones and state the active ingredients of each.
   b. Propagate the different types of cuttings used in a sexual propagation (including softwood, semi-hardwood, hardwood, root, leaf, tip, mallet, and cane cuttings).
   c. Design a mist bench for commercial propagation of cuttings.
   d. Describe the environmental factors for optimum propagation.
   e. State requirements and components of a propagation medium.
   f. Propagate plants through separation and division.
   g. Identify and describe procedures for specialized root and stem cutting methods (including tubers, corms, rhizomes, stolens, and bulbs).
   h. Describe the process by which plants are propagated by tissue culture and the advantages and disadvantages of this method.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Emphasize seed scarification and stratification techniques.
   a. Identify and describe seed treatment procedures for seeds containing immature embryos, dormant embryos, and/or hard seed coats.
   b. Collect, clean, treat, and plant a minimum of five woody plant seeds.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Demonstrate concepts involved in grafting and budding.
   a. Describe the factors to consider in collecting and storing scion and bud wood.
   b. Identify the cambium layer of a stem and describe its role and importance in grafting.
   c. Propagate a plant by whip grafting.
   d. Propagate a plant by patch budding.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

4. Demonstrate concepts involved in layering techniques.
   a. Describe the procedures used in layering plants including simple, air, trench, mound, tip, and serpentine layering.
   b. Propagate a plant using trench, mound, or tip layering.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
5. Describe the symptoms of damping off and identify chemical and cultural methods for control.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M4, S2
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Greenhouse and Nursery Production II

Course Abbreviation: HLT 2323

Classification: AOC Core (Horticulture Technology)

Description: A continuation of Greenhouse and Nursery Production I with emphasis on production practices associated with fertilization, pest control, environment control, and marketing. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: Greenhouse and Nursery Production I (HLT 2323)

Competencies and Suggested Objectives:

1. Prepare a complete production schedule for a fall crop.
   a. Develop a crop program for fall production of greenhouse plants to include selection of plant species to be grown, timing of operations, supplies, marketing, production costs, and spacing for optimum production.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Examine fertilization principles.
   a. Identify and describe the use of fertilizer proportioners in greenhouse and nursery production.
   b. Describe factors which influence fertilizer application rates and methods on different plants.
   c. Contrast the advantages and disadvantages of different fertilizer formulations.
   d. Calculate the amount of chemicals and water needed to produce a solution that contains the recommended parts-per-million mixture of active ingredients for a specific crop.
   e. Apply different fertilizer formulations.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Calculate and use growth regulators.
   a. Describe the use of and apply growth regulators on specific greenhouse and nursery crops.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
4. Identify pest and pest management procedures.
   a. Identify major greenhouse pests including insects, viruses, bacteria, fungi, and weeds and describe their life cycle and control.

b. Develop and implement an integrated pest management system for greenhouse or nursery operation.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S8

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

5. Recognize lighting concepts for crop production.
   a. Describe methods for maximizing and minimizing light intensity for greenhouse crops.
   b. Describe the concept of photoperiod manipulation and apply it to the production of greenhouse crops.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S3

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
6. Evaluate nursery production techniques and methods.
   a. Describe, contrast, and apply nursery production techniques for bare root, container, and field grown stock.
   b. Use the American Standards for Nursery Stock to grade nursery plants.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, S2, S4, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Equipment Operation and Maintenance

Course Abbreviation: HLT 1614

Classification: AOC Core (Landscape Management Technology), Vocational-Technical Elective (Horticulture Technology)

Description: A course to provide instruction and practice in the safe and proper operation and maintenance of landscaping equipment to include power tools, small engines, tractors, and tractor attachments. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate proper maintenance, handling, and storage of landscape maintenance equipment.
   a. Identify power equipment used in landscaping and describe their function or use.
   b. Describe storage procedures for power tools.
   c. Use an operator's manual to determine maintenance and storage procedures, fuel and lubricant specifications, and operating procedures for a specific piece of equipment.
   d. Perform owner-operator maintenance on a diesel tractor to include checking fluid levels, changing oil and filters, servicing air filter, bleeding fuel system, etc.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M8, S6, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Describe basic first aid and safety precautions for using landscape maintenance equipment.
   a. Describe basic first aid procedures for treating shock, heat stroke, cuts, burns, poisoning, etc.
   b. Describe safety precautions to be followed in working with landscaping equipment and supplies.
   c. Describe safety precautions and rules to be followed in using tractors and riding mowers.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M8, S6, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Demonstrate safe and proper operation of landscape maintenance equipment.
   a. Demonstrate the ability to properly and safely operate the following equipment: push mower, string trimmer, edger, chain saw, hedge trimmer, blowers, backpack sprayer, tiller, spreader, etc.
   b. Operate a tractor or riding lawn mower safely and properly.

c. Safely and properly attach and operate implements and tractor-mounted equipment including: box blade, front-end loader, spray rig, mowers, etc.
d. Load, secure, and transport equipment safely.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, S6, S8
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

4. Demonstrate maintenance of two- and four-stroke gasoline engines.
   a. Differentiate between two-stroke and four-stroke gasoline engines.
   b. Perform owner-operator maintenance on a two-stroke engine to include mixing oil and fuel, servicing air filters, replacing spark plugs, etc.
   c. Perform owner-operator maintenance on a four-stroke engine to include checking/changing oil, servicing air filters, replacing spark plugs, etc.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, S6, S8
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Floral Design

Course Abbreviation: HLT 2413

Classification: Vocational-Technical Elective (Horticulture Technology)

Description: A course to develop knowledge and skills associated with retail floristry. Includes instruction in preparing arrangements with fresh and dried materials, seasonal pieces, funeral sprays, and the use of floral wire services. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Explain the uses of different pieces of equipment and supplies used in floral design.
   a. Describe the uses of different pieces of equipment used in floral design.
   b. Describe the uses of supplies used in floral design.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Explain the use of cut flowers and other plant materials used in floral design.
   a. Describe the use of cut flowers and other plant materials used in floral design.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Examine floral preservation techniques.
   a. Describe and apply factors to consider in conditioning and storing flowers and plant materials.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
4. Create floral designs in commercially applicable styles.
   a. Prepare a circular arrangement with fresh flowers.
   b. Prepare a horizontal arrangement with fresh flowers.
   c. Prepare a triangular arrangement with fresh flowers.
   d. Prepare an angle design with fresh flowers.
   e. Prepare specialty designs including corsages, boutonnieres, and wedding bouquets.
   f. Prepare a standing wreath for a funeral.
   g. Prepare a basket arrangement for a funeral.
   h. Prepare a bud vase.

i. Prepare a Christmas arrangement.
j. Prepare a seasonal dried arrangement.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S2

Workplace Skills (See Aopendix B): WP1, WP2, WP4, WP6

5. Illustrate a knowledge of practical delivery.
   a. Organize a delivery schedule for floral orders.
   b. Demonstrate procedures for delivering floral times.

   Related Academic Topics (See Appendix A): C1, C2 C3, C4, C5, C6, M1, M4, M7, S2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
6. Explain floral wire capabilities.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Garden Center Management

Course Abbreviation: HLT 2513

Classification: Vocational-Technical Elective (Horticulture Technology, Landscape Management Technology)

Description: A course to develop knowledge and skills associated with management of a retail garden center. Includes instruction in basic principles of entrepreneurship as applied to garden centers, product display and advertising, and facilities. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe the business principles associated with acquiring, organizing, and operating a garden center.
   a. Describe the advantages and disadvantages of the different forms of business ownership.
   b. Discuss considerations to be taken into account in purchasing an existing business.
   c. Generate a budget for going into business to include facility and inventory acquisition expenses, operating expenses, and income for one year.
   d. Identify capital sources for start-up of a garden center business.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, M4, M5

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Explain the concepts necessary to build a garden center business to include choosing a location, merchandising and promotion techniques, facilities maintenance and public relations.
   a. Describe factors to include in a personnel management and training program for employees.
   b. Describe factors which affect the development of an image for a business.
   c. Discuss factors to consider in selecting a location for a garden center business.
   d. Describe factors to consider in organizing and displaying products and plant materials for optimum merchandising.
   e. Discuss and contrast the different means of advertising.
   f. Develop a plan for keeping facilities, display area, and plants in the inventory clean, attractive, and well-maintained.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, M4, M5

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

3. Design a profitable financial management system.
   a. Develop a pricing system which takes into account overhead costs and provides a reasonable profit.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, M4, M5

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Construction

Course Abbreviation: HLT 2713

Classification: AOC Core (Landscape Management Technology), Vocational-Technical Elective (Horticulture Technology)

Description: A course which provides instruction and practice in the installation of a landscape plan to include site preparation, installation of site amenities, bed preparation and planting, and shrub and tree planting. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Develop a plan for sequencing and timing the different events and operations required for a landscape installation job.
   a. Develop a plan for basic site preparation operations to include grading, filling, addition of soil amendments, and soil tillage and preparation.
   b. Describe the installation of hard scape in the landscape industry.
   c. Lay out and install a landscape bed.
   d. Install trees and shrubs as per specifications on drawings.
   e. Describe the concept and implication of a landscape warranty.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, M4, M5
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Discuss drainage problems in the landscape.
   a. Describe and contrast the different ways to solve drainage and erosion problems in a landscape.
   b. Measure grades and elevations.
   c. Calculate volumes of landscape materials.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, M4, M5
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Explain state regulations required to obtain a landscape gardener's license.
   a. Describe state regulations required to obtain a landscape gardener's license.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, S2, S4, M4, M5
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Design II

Course Abbreviation: HLT 2523

Classification: AOC Core (Landscape Management Technology), Vocational-Technical Elective (Horticulture Technology)

Description: A continuation of Landscape Design I with emphasis on planting design and preparation and presentation of landscape plans using computer-aided landscape software. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: Landscape Design I (HLT 1513)

Competencies and Suggested Objectives:

1. Describe and illustrate basic planting design techniques.
   a. Produce appropriate plant combinations.
   b. Incorporate site amenities with appropriate plant combinations.
   c. Complete landscape design to include plant combinations and site amenities.

   Related Academic Topics (See Appendix A): M1, M5, M7, S4, S2, C1, C2, C3, C4, C5, C6

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Demonstrate the use of computer software used in the preparation of landscape plans and drawings pertaining to the Green Industry.
   a. Demonstrate and review different landscape design computer software used in preparing landscape plans and drawings.
   b. Complete software-specific tutorial exercises for landscape design software.
   c. Prepare residential and commercial landscape plans utilizing landscape design computer software.

   Related Academic Topics (See Appendix A): M1, M5, M7, S4, S2, C1, C2, C3, C4, C5, C6

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

LANDSCAPE MANAGEMENT COURSES

Course Name: Turfgrass Management

Course Abbreviation: HLT 2113

Classification: AOC Core (Landscape Management Technology)

Description: A course to provide instruction and practice in the identification, selection, installation, and management/maintenance of turfgrass. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss the role of turfgrass and its importance in the Green Industry.
   a. Discuss the role of turfgrass in landscape management.
   b. Describe the role of the turfgrass manager.
   c. Identify the different types of turfgrasses and discuss their classification, growth habits, advantages, and disadvantages.
   d. Identify different types of mowing equipment and describe the uses and limitations of each type.
   e. Describe the role of sod farming and seed harvesting in the green industry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Describe the steps to establish turfgrass.
   a. Associate soil types and soil modification techniques with management of different turfgrasses.
   b. Discuss the advantages and disadvantages of the different methods of turfgrass establishments.
   c. Establish turfgrasses by seeding, plugging, sprigging, and sodding.
   d. Calculate the proper amount and apply fertilizer and other amendments to meet soil test requirements for fertility and pH adjustment.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Describe the maintenance procedures to manage a healthy turf.
   a. Plan fertilization programs and application schedules for different turfgrasses.
   b. Discuss factors to consider in planning a mowing program for different turfgrasses including frequency of mowing and mower height.
   c. Discuss irrigation needs of turf and signs which indicate when irrigation is needed.

d. Describe cultural procedures of turfgrass management including dethatching and aeration.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

4. Discuss golf course design and management.
   a. Discuss the basic design and layout procedures of a golf course.
   b. Discuss maintenance practices for greens, trees, fairways, traps, and roughs.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Landscape Business Management

Course Abbreviation: HLT 2313

Classification: AOC Core (Landscape Management Technology)

Description: A course to provide instruction and practice regarding the management of a landscape operation. Includes instruction in estimating and bidding; personnel management, supervision, and development; and business practices. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss entrepreneurship opportunities in the Green Industry.
   a. Describe factors to consider in making a decision to open a business.
   b. State sources and procedures for funding a small business.
   c. Describe the advantages and disadvantages of the different forms of business ownership.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Demonstrate proper record keeping procedures associated with business ownership.
   a. Describe the uses of records in managing a landscape business.
   b. Maintain records for a small landscaping business including income and expense statements, inventory, and a net worth statement.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Describe procedures and techniques for hiring and retaining employees.
   a. Discuss methods for training employees.
   b. Describe factors related to employer-employee relationships including insurance, wages and benefits, withholding taxes, performance evaluation, employer liability, and terminations.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
4. Describe the steps in developing and submitting a bid.
   a. Interpret specifications and working drawings.
   b. Complete sample forms required for submitting estimates and bids.
   c. Write a bid for a specific job which includes direct and indirect costs.

d. Write a contract for a specific job which includes the following essential elements: working drawings and specifications, general and specific conditions, and methods of payment.
e. Develop a work schedule for a landscape business.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M5, M7, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Irrigation and Lighting Systems

Course Abbreviation: HLT 2824

Classification: AOC Core (Landscape Maintenance Technology)

Description: A course designed to investigate the types of irrigation/lighting systems. Discussion will include the installation and maintenance of these systems. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Landscape Design I (HLT 1513)

Competencies and Suggested Objectives:

1. Describe the basic components of an irrigation system.
   a. Discuss the past, present, and future types of irrigation systems.
   b. Describe the basic components such as sprinkler heads, controllers, fitting, emitters, valve, and pipe.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
2. Describe and discuss the general design of an irrigation system.
   a. Differentiate between commercial and residential irrigation systems.
   b. Determine the correct location of the sprinkler head/emitters for even water distribution.
   c. Calculate the correct pipe sizes to reduce friction loss.
   d. Compare the efficiencies of spray, rotary, and impact drive heads.
   e. Explain static pressure, working pressure, surge pressure, velocity, and friction loss on a simple irrigation system.
   f. Determine watering time needed per week depending on type of irrigation system and soil type.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
3. Calculate the cost estimate of a simple irrigation system.
   a. Determine the price of the irrigation components from the information supplied.
   b. Determine the cost estimate for installation of the irrigation system to include labor, equipment, supplies, and contingencies.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

4. Describe the methods and procedures to follow in the installation of an irrigation system.
   a. Explain the laying out of an irrigation system to include the tools and equipment necessary.
   b. Describe the installation process including pipe fitting, starting and finishing points, system testing, and clean-up.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
5. Discuss the procedures to follow and the equipment to be used in maintaining an irrigation system.
   a. Explain the process to follow when locating hydraulic leaks and electrical or mechanical failure.
   b. Identify and use the equipment necessary to maintain an electrical or hydraulic sprinkler system.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
6. Describe the types and basic components of outdoor lighting.
   a. Discuss uses of landscape lighting.
   b. Identify and discuss basic components of an outdoor lighting system.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
7. Discuss the design of a lighting system.
   a. Differentiate between residential and commercial lighting systems.
   b. Discuss automated and manual systems.
   c. Calculate wiring to install a lighting system.
   d. Install an outdoor lighting system.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
8. Calculate cost estimate of an outdoor lighting system.
   a. Determine component cost of a lighting system.
   b. Determine estimate for installation to include labor, materials, and contingencies.

   Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
9. Describe methods in the installation of an outdoor lighting system.
   a. Discuss the layout of a lighting system to include tools and equipment necessary.
   b. Describe installation process of the lighting system to include wiring, starting and finishing points, system testing, and clean-up.

Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

10. Discuss the procedures to follow and the equipment to be used in maintaining a lighting system.
Related Academic Topics (See Appendix A): M5, M4, M7, S2, C1, C4, C5, C6, C2
Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

RELATED VOCATIONAL-TECHNICAL COURSES

Course Name: Fundamentals of Microcomputer Applications

Course Abbreviation: CPT 1113

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course will introduce information processing concepts to include: word processing, spreadsheet, and database management software. **Service course; not to be taken by Business and Office and Related Technology students.** (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss hardware components.
   a. Describe the input, output, and storage elements of the information processing cycle and explain each element.
   b. Describe and discuss the three main classifications of the computer to include micro, mid-range, and mainframes.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Explain classes of software.
   a. Describe functions of systems software.
   b. Identify widely used software applications.
   c. Discuss various high level languages.
   d. Discuss data organization.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Create and print mailable documents.
   a. Develop keyboarding skills.
   b. Prepare letters using full block style.
   c. Use word processing software to produce documents.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Create and print spreadsheet.
   a. Use spreadsheet software to produce acceptable worksheets.
   b. Generate graphs from worksheets.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

5. Create and print database files.
   a. Use database software to produce databases.
   b. Edit database records.
   c. Print reports.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Integrate application information.
   a. Merge a database with a word processing letter.
   b. Merge a spreadsheet with a letter.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Applied Business Math

Course Abbreviation: BOT 1313

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course is designed to develop competency in mathematics for business use. Ten-key touch method on the electronic desktop calculators is stressed. (3 sch: 3 hr. lecture)

Prerequisite: None

Competencies and Suggested Objectives:

1. Operate a calculator using the touch method.
   a. Build speed and accuracy in data entry.
   b. Proofread and edit numbers.
   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M2
   Workplace Skills (See Appendix B): WP2, WP6
2. Solve mathematical problems.
   a. Analyze the problem.
   b. Round numbers and estimate a solution to the problem.
   c. Perform mathematical computations.
   d. Compare estimated solution with computed solution.
   Related Academic Topics (See Appendix A): C1, C2, C3, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP3, WP4, WP6
3. Apply math skills to business transactions, reports, and documents.
   a. Complete and verify various business forms including calculating discounts on invoices.
   b. Compute and compare interest and finance charges.
   c. Calculate percent of increase/decrease.
   d. Complete depreciation schedules.
   e. Complete payroll and taxes.
   f. Compute commission, markup, and selling price.
   g. Use deductive reasoning to solve problems and generate conclusions.
   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M2, M7
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
4. Apply math skills to personal finances.
   a. Reconcile a bank statement.
   b. Compute personal taxes.
   c. Compute insurance costs.
   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M2, M7
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Course Name: Marketing I

Course Abbreviation: MMT 1113

Classification: Related Vocational-Technical (From Marketing Management Technology)

Description: Study of principles and problems of marketing goods and services and methods of distribution from producer to consumer. Types, functions, and practices of wholesalers and retailers and efficient techniques in the development and expansion of markets. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Explain and analyze the significance of the marketing functions.
   a. Explain the marketing concept and how it is being broadened.
   b. Identify and analyze the sociocultural influence on consumer behavior.
   c. Contrast the industrial market with the consumer market, including the marketing of goods, services, or ideas.
   d. Identify categories of segmentation variables and give examples of specific variables in each category for segmenting the consumer market.
   e. Analyze the marketing mix variables over the life cycle of a product or service.
   f. Explain and analyze the effect of supply and demand on the marketing variables.
   g. Determine the characteristics of the competitive environments.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M6
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Advertising

Course Abbreviation: MMT 1323

Classification: Related Vocational-Technical (From Marketing Management Technology)

Description: The role of advertising as a promotional tool. Topics included are product and consumer analysis, media selection, and creation of advertising. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: None

Competencies and Suggested Objectives:

1. Plan, organize, execute, and evaluate effective promotion through mass advertising.
   a. Analyze and identify the target market for a promotion.
   b. Develop strategies for campaigns and individual advertising messages.
   c. Construct an advertising budget.
   d. Determine advertising costs from rate cards or other information.
   e. Determine what products to advertise and why.
   f. Determine logical media choices and contrast media choices.
   g. List sources for locating secondary information.
   h. Develop and prepare effective print and broadcast copy.
   i. Prepare copywriter's rough layouts for advertisement.
   j. Create an advertising campaign.
2. Analyze principles of design.
   a. Develop design with formal and informal balance.
   b. Develop color scheme.
   c. Develop design using exact repetition design, alteration design, and progression design.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M6, M7, S1

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Course Name: Applied Soils-Conservation and Use

Course Abbreviation: AGT 1714

Classification: Related Vocational-Technical (From Agricultural Business and Management Technology Cluster)

Description: A course to introduce the student to the general principles of soil conservation and safe use. Includes instruction in the soil formation process, properties of soils, soil texture, and soil management for optimum safe use. (4 sch: 3 hr. lecture, 2 hr. lab) (Note: Basic Soils (AGR 2314) may be substituted for this course.)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe the soil formation process.
   a. Describe the chemical and biological properties of soils.
   b. Discuss the different types of erosion.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
2. Describe the different physical properties of soils.
   a. Define the term soil texture and relate texture to productivity and management.
   b. Classify soils as to general textural class.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
3. Develop soil management strategies for sustaining soil productivity.
   a. Define and contrast the terms fertility and productivity as applied to a soil.
   b. Describe the effects of tillage and traffic as related to soil structure and productivity.
   c. Describe how soil pH affects plant growth and state methods which can be used to raise or lower pH.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
4. Use a transit level to design and calculate the cost of structures designed to protect and develop soil productive capacity.
   a. Design a pond levee and calculate the cost of construction.

b. Design a terrace system and calculate the cost of this system.
Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M5, M7, S4, S5, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8

Course Name: Applied Principles of Plant Production

Course Abbreviation: AGT 1313

Classification: Related Vocational-Technical (From Agricultural Business and Management Technology Cluster)

Description: A course to provide information related to the growth, nutrition, and general culture of agricultural and horticultural crops. Includes instruction on photosynthesis and transpiration, plant nutrition, pest control, and reproduction. (3 sch: 2 hr. lecture, 2 hr. lab) (Note: Plant Science (AGR 1313) or Botany (BIO 1313) may be substituted for this course.)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe the interrelationship of the major parts of a plant and how they have adapted to the environment.
   a. Describe the interrelationship of plant roots, stems, and leaves and how they have adapted to the environment.

   Related Academic Topics (See Appendix A): C1, C4, C5, S2, S3, S7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
2. Identify the components of a typical plant cell and describe their function(s).
   a. Identify the structure and function of each plant cell organelle.
   b. Describe the different tissue systems of plants.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
3. Describe the chemical composition of plants.
   a. Contrast and compare carbohydrates, proteins, and fats found in plants.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
4. Describe the processes and interrelationship of photosynthesis and respiration in green plants.
   a. Explain the effects of temperature, light, water, and air on green plants.
   b. Discuss the translocation of water from the roots to the leaves.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
5. Describe the methods of weed, insect, and plant disease control.
   a. Describe different methods of pest control, namely, chemical, mechanical, cultural, and biological.

b. Identify the different types of plant pests.
c. Describe the damage caused by agricultural crop pests.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8

6. Describe the genetics of plant breeding.
   a. Describe the advantages and disadvantages of sexual and asexual reproduction.
   b. Describe the creation of new varieties through plant breeding (hybrids).

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8
7. Explain the nutritional requirements for plants.
   a. Describe the functions micro and macro nutrients in plants.
   b. Compare the advantages and disadvantages of chemical and organic fertilizers.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S2, S3, S5, S7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6, WP8

Course Name: Elementary Surveying

Course Abbreviation: DDT 1413

Classification: Related Vocational-Technical (From Drafting and Design Technology)

Description: Basic course dealing with principles of geometry, theory, and use of instruments, mathematical calculations, and the control and reduction of errors. (3 sch: 1 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate the ability to measure and record various measurements.
   a. Describe the use of the United States Geological Survey benchmark.
   b. Measure horizontal and vertical angles.
   c. Measure horizontal and vertical distances in English and metric.
   d. Demonstrate differences in elevation between random points.
   e. Record and interpret field notes.
   f. Explain the various duties of each member of a survey party.

   Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8

   Workplace Skills (See Appendix B): WP2, WP5, WP6
2. Demonstrate the use of surveying equipment, terms, and signals.
   a. Identify and explain the basic surveying equipment.
   b. Set up the equipment, shoot elevations, and record.

   Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8

   Workplace Skills (See Appendix B): WP2, WP5, WP6

Course Name: Business Accounting

Course Abbreviation: BOT 1433

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course is designed to develop an understanding of recording, classifying, and summarizing business transactions and events with insight into interpreting and reporting the resulting effects upon the business. (3 sch: 3 hr. lecture)

Prerequisite: None

Competencies and Suggested Objectives:

1. Demonstrate an understanding of basic accounting terminology, concepts, and procedures.
   a. Analyze business transactions in terms of the accounting equation.
   b. Determine the effects of business operations on owner's equity.
   c. Utilize the basic accounting cycle in analyzing the flow of financial data.
   d. Classify, journalize, and post financial information.
   e. Perform end-of-period accounting functions.

   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Prepare each of the basic financial statements.
   a. Prepare a balance sheet.
   b. Prepare an income statement.
   c. Prepare a statement of owner's equity.

   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Use special journals for recording transactions.
   a. Use a combined cash journal and manage a commercial petty cash journal.
   b. Use a sales journal, purchases journal, cash payments journal, and cash receipts journal.

   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Computerized Accounting

Course Abbreviation: BOT 2413

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course applies basic accounting principles using a computerized accounting system. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: Business Accounting (BOT 1433)

Competencies and Suggested Objectives:

1. Perform the operations of the accounting cycle on the computer using accounting software.
   a. Build and utilize a computerized general ledger system and maintain a chart of accounts.
   b. Build and utilize a computerized accounts receivable system.
   c. Build and utilize a computerized accounts payable system.
   d. Utilize an integrated, computerized accounting system.

   Related Academic Topics (See Appendix A): C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Use accounting software to maintain inventory, depreciation, and payroll records.
   a. Compute depreciation schedules.
   b. Maintain inventory records.
   c. Calculate and prepare payroll records.

   Related Academic Topics (See Appendix A): C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Prepare and analyze financial statements using accounting software.
   a. Prepare balance sheets, income statements, and statements of owner's equity.
   b. Prepare schedules of accounts payable and accounts receivable.
   c. Prepare statements of change in financial position.

   Related Academic Topics (See Appendix A): C1, C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Differentiate between manual and computerized accounting.
   a. Identify the advantages and disadvantages of a computerized accounting system.
   b. Identify the importance of maintaining backup copies of data.

   Related Academic Topics (See Appendix A): C1, C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Fundamentals of Drafting

Course Abbreviation: DDT 1114

Classification: Related Vocational-Technical (From Drafting and Design Technology)

Description: Course designed to give drafting majors the background needed for all other drafting courses. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss classroom procedures and drafting occupations.
   a. Describe proper classroom/lab procedures.
   b. Describe the various occupations in drafting and their requirements.
   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
2. Explain and apply safety rules and regulations.
   a. Describe safety rules for drafting occupations.
   b. List and discuss hazardous materials found in the drafting area.
   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
3. Demonstrate the ability to apply proper techniques in instrument drawings.
   a. Demonstrate the ability to scale drawings.
   b. Construct various angles.
   c. Recognize and construct the different types of lines.
   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
4. Demonstrate the ability to sketch and develop views of basic shapes.
   a. Develop a pictorial view from three principal views.
   b. Develop three principal views from a pictorial view.
   c. Complete three principal views when lines are missing.
   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
5. Demonstrate the ability to use geometric constructions.
   a. Construct tangent arcs and lines.
   b. Divide lines or arcs into equal and/or proportional parts.
   c. Develop geometric shapes.
   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6

6. Demonstrate the ability to construct orthographic projections.
   a. Construct a top view, with front and right side views given.
   b. Construct a front view, with top and right side views given.
   c. Construct a right side view, with top and front views given.
   d. Develop a drawing consisting of three principal views.

   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
7. Demonstrate the ability to dimension objects.
   a. Recognize lines, symbols, features, and conventions used in dimensioning.
   b. Recognize and use size and location dimensions.
   c. Recognize and use general and local notes.
   d. Dimension a drawing using contour, chain, and baseline dimensioning.

   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6
8. Demonstrate the ability to construct sectional views.
   a. Construct full and half sectional views.
   b. Recognize and construct removed, revolved, offset, and aligned sectional views.

   Related Academic Topics (See Appendix A): C2, C5, C6
   Workplace Skills (See Appendix B): WP2, WP5, WP6

Course Name: Professional Development

Course Abbreviation: BOT 1213

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course develops an awareness of interpersonal skills essential for job success. Topics include positive self-image, professional image, work ethics, time and stress management, and human relations skills. (3 sch: 3 hr. lecture)

Prerequisite: None

Competencies and Suggested Objectives:

1. Formulate personal, educational, and professional goals and develop a plan to accomplish those goals.
   a. Develop a plan for personal, educational, and professional growth.
   b. Discuss the necessity of lifelong learning.
   c. List the benefits of professional affiliations and certification programs.
   d. Discuss the advantages of membership and participation in professional organizations.
   e. Begin preparations for the job application process.

   Related Academic Topics (See Appendix A): C1, C3
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Demonstrate an understanding of how interpersonal skills affect personal and professional development.
   a. Apply techniques to improve listening, verbal, and nonverbal communication skills.
   b. Discuss interpersonal skills essential to successful communications with people from diverse cultural and international backgrounds and with the differently-abled.
   c. Apply business etiquette skills in professional situations.
   d. Apply problem-solving and conflict-resolution skills.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Identify and discuss personal and professional factors associated with job success.
   a. Identify techniques that will build a positive self-image.
   b. Project a professional image by applying the basics of good health practices and personal grooming and selecting a proper business wardrobe.

c. Discuss principles of effective time and stress management.
Related Academic Topics (See Appendix A): C1, C3, C5, C6, S1, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

RELATED ACADEMIC COURSES

Course Name: Business Mathematics

Course Abbreviation: BAD 1313

Classification: Related Academic

Description: This course emphasizes the study of the fundamental processes, fractions, decimals, percentage, and problem solving. The application of these fundamental processes is applied toward the problems of business which the student will encounter in the various commercial fields.

Course Name: Introduction to Business

Course Abbreviation: BAD 1113

Classification: Related Academic

Description: This course includes an introduction to the major division of study that will be followed in succeeding business courses such as Business Organization, Accounting, Business Law, and other related courses.

Course Name: Business Law

Course Abbreviation: BAD 2413

Classification: Related Academic

Description: This course is designed to acquaint the student with the fundamental principles of law as they relate to the basic legal problems of business transactions in our economy. Special attention will be given to an introduction to law; law of contracts; agencies and employment; and negotiable instruments and commercial papers.

July 30, 1996

Course Name: Botany

Course Abbreviation: BIO 1314

Classification: Related Academic

Description: This course deals with the application of biological principles to the study of plants including classification, anatomy and physiology, and function.

Course Name: Plant Science

Course Abbreviation: AGR 1313

Classification: Related Academic

Description: This course uses scientific principles as the basis for practice in producing, handling, processing, marketing, and utilizing agronomic and horticultural crops.

July 30, 1996

Course Name: Engineering Drawing I

Course Abbreviation: GRA 1112

Classification: Related Academic

Description: This course develops the use of instruments, geometric construction, orthographic projections, sectional views, and lettering.

Course Name: Principles of Economics (Macroeconomics)

Course Abbreviation: ECO 2113

Classification: Related Academic

Description: This course is an introduction to economic principles, problems, and policies with emphasis on the monetary system and national income theory and measurement.

July 30, 1996

Course Name: Freehand Drawing

Course Abbreviation: ART 1313

Classification: Related Academic

Description: This course is a study of basic principles of construction of visual forms. Emphasis on line, perspective, and shading. Use of black and white – media, pencil, charcoal.

SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR HORTICULTURE TECHNOLOGY PROGRAMS

1. Plant Presses (12 per program)
2. Herbarian Sheets (500 per program)
3. Blotter Sheets (300 per program)
4. Plant Collection Storage Unit (4 per program)
5. Blue Print Machine with Ammonia Filter Unit (1 per program)
6. 5 Drawer Flat File Storage (2 per program)
7. Drafting Table - 36" X 48" min. (20 per program)
8. Parallel Bars - 48" (20 per program)
9. Board Cover - 36" X 48" (20 per program)
10. Architect Drafting Table Lights (20 per program)
11. Drafting Chairs (20 per program)
12. Complete Drafting Set (1 per program)
13. Electric Eraser (1 per program)
14. Insect Boxes (15 per program)
15. Spreading Boards (15 per program)
16. 35 MM Camera with Flash and Various Lens (1 per program)
17. Tripod for 35 MM Camera (1 per program)
18. Riker Mount - Various Sizes (50 per program)
19. Insect Nets (12 per program)
20. Scale: 25 Pound Capabilities - Metric and Standard Weighing Scale (1 per program)
21. Sprayer - Backpack with Agitator (6 per program)
22. Sprayer Hand Held Pump/Pressure - 2½ gallon (6 per program)
23. Sprayer Siphon/Hose On (4 per program)
24. Sprayer Boom Type - Trailer Mount with 100 Gallon Tank (1 per program)
25. Color Multi-Pin Plotter (1 per program)
26. Markers (150 per program)
27. Colored Pencils (150 per program)
28. Electronic Planimeter (3 per program)
29. Measuring Wheel (3 per program)
30. Tape Measure - 25' X 1" Steel Tape (12 per program)
31. Tape Measure - 100 Fiberglass (6 per program)
32. Tape Measure - 200 Fiberglass (6 per program)
33. Automatic Level (1 per program)
34. Tripod for Level (1 per program
35. Philadelphia Rod - 1/10ths (1 pr program)
36. Paint Stick - Long (2 per program)
37. Paint Stick - Short (2 per program)
38. Marking Paint (2 cases per program)
39. Stereoscopes without Camera Capabilities (6 per program)
40. Computer with Mouse, CD Rom, Modem, and Fax Capabilities (1 per program)

41. Computers w/CD-ROM, Mouse (12 per program)
42. 17" Monitor (13 per program)
43. Color Laser Printer (6 per program)
44. Tractor - min. 26 HP (1 per program)
45. Measuring Cups - Assorted Sizes in Plastic, Glass, and Stainless (24 per program)
46. Beakers - Various Sizes (24 per program)
47. Measuring Spoons - Various Sizes (24 sets per program)
48. Utility Vehicle (1 per program)
49. Box Blade for Tractor (1 per program)
50. Front End Loader (1 per program)
51. 48" Grooming Mower Attachment for Tractor (1 per program)
52. 48" Reel Riding Mower (1 per program)
53. 48" Rotary Riding Mower (1 per program)
54. Walk Behind Reel Mower - 22" (1 per program)
55. Walk Behind Rotary/Self Propelled - 36" (1 per program)
56. Commercial String Trimmer - 32 cc min. (6 per program)
57. Commercial Stick Edger - 32cc min. (4 per program)
58. Commercial Backpack Blower (4 per program)
59. Walk Behind Power Bed Edger (1 per program)
60. Hand Held Blower (2 per program)
61. Push Brooms with Extra Handles (6 per program)
62. Garden Hoes (6 per program)
63. Spreaders - Cyclone/Broadcast (3 per program)
64. Spreaders - Drop Spreaders (1 per program)
65. Spreaders - Tractor Mount (1 per program)
66. Top Dresser - Self Contained (1 per program)
67. Aerator - Self Propelled (1 per program)
68. Sod Cutter (1 per program)
69. De-Tatcher (1 per program)
70. Verti-Cutter (1 per program)
71. Truck - V-8, Club Cab, Automatic, Dump Bed, Box Hitch, One Ton Min. (1 per program)
72. Trailer, Double Axle, 16' with Ramp (1 per program)
73. 40' Chain (1 per program)
74. Chain Binders (4 per program)
75. Ratchet Straps (12 per program)
76. Sod Roller - Water Fill (1 per program)
77. Manual Grease Gun (3 per program)
78. Full Set of Metric Mechanics Tools - 500 pieces (1 per program)
79. Full Set of Standard Mechanics Tools - 500 pieces (1 per program)
80. Tool Boxes - Lockable with Casters (2 per program)
81. Bench Grinders - 3/4 HP (2 per program)
82. Bench Vise (6 per program)

83. Bench Work Tables - Wood/Steel Tops (6 per program)
84. Shower Area for Containment of Chemicals (1 per program)
85. Deep Sink for Equipment Wash-up and Floral Design (4 per program)
86. Shovels - Round Point (12 per program)
87. Shovels - Square Point (6 per program)
88. Leaf Rake (12 per program)
89. Bow Rake (12 per program)
90. Landscape Rake - 36" (4 per program)
91. Landscape Rake - 24" (4 per program)
92. Water Hose - 3/4 X 100'/75' (24 per program)
93. Water Wands (6 per program)
94. Sprinklers - Various Types and Sizes (6 per program)
95. Nozzles (6 per program)
96. Tamps (2 per program)
97. Ball Carts (2 per program)
98. Tree Carts (2 per program)
99. Wheel Barrow - Steel Tray/Plastic Tray (6 per program)
100. Nursery Carts (4 per program)
101. Tree Slings - Large and Small (1 each per program)
102. Complete Soil Test Kit (4 per program)
103. Soil Sampler (6 per program)
104. Soil Augers - 1 Power and 2 Manual (3 per program)
105. PH Meter and Soil Probe (6 per program)
106. Welders - Arc Welder (2 per program)
107. Cutting Torches (1 per program)
108. 50 Gallon Air Compressor/Industrial Hose and Attachment (1 per program)
109. Pneumatic Wrenches, Full Set (1 per program)
110. Air Tank, Portable (1 per program)
111. Gas Cans - 2½ gallon (12 per program)
112. Adding Machines (12 per program)
113. Tiller, Rear Tine (1 per program)
114. Tiller, Front Tine (1 per program)
115. Concrete Hoe (2 per program)
116. Mattock, Cutting and Digging (2 per program)
117. Railroad Pick (1 per program)
118. Chain Saw (1 per program)
119. Hand Saw (1 per program)
120. Pruning Shears (12 per program)
121. Loppers (6 per program)
122. Pole Pruner (4 per program)
123. Fertilizer Probe (6 per program)
124. Ladder - 24' Extension (1 per program)
125. Ladder, Step (8') (2 per program)
126. First Aid Kit (2 per program)

127. Drill - ½" Reversible (1 per program)
128. Hand Grinder (2 per program)
129. Gas-Powered Hedge Trimmer (1 per program)
130. Electric-Powered Hedge Trimmer (1 per program)
131. Parts Washer (1 per program)
132. Pressure Washer (1 per program)
133. Voltage Meter (1 per program)
134. Flow Meter (1 per program)
135. Short Indicator/Finder (1 per program)
136. Compression Coupling Wrenches (2 per program)
137. Wire Cutter/Stripper (6 per program)
138. Valve Wrenches - 4' (4 per program)
139. Trenching Shovels (4 per program)
140. Water Key (2 per program)
141. Zurn Key (2 per program)
142. Auto Seeder for Plug Production (1 per program)
143. Complete Greenhouse - 30 X 100 Fully Operational with heating, cooling, benches, watering, and time clocks (2 per program)
144. Proportioner (2 per program)
145. Lath House - 30 X 100 Shade Structure (1 per program)
146. Electric or Gas Greenhouse Portable Sprayer - 15 gallon (2 per program)
147. Floral Models (2 per program)
148. Potting Bench (6 per program)
149. Propagation Mat (4 per program)
150. Auto Propagation Mist System (1 per program)
151. Germination Chamber (2 per program)
152. Hammer, Sledge (1 per program)
153. Soil Mixer (1 per program)
154. Steel Pick Machine (20 per program)
155. Ribbon Shears (20 per program)
156. Wire Cutters (20 per program)
157. Serrated Scissors (20 per program)
158. Hot Glue Gun (20 per program)
159. Cool-Melt Glue Gun (10 per program)
160. Electric Styro-Cutter (6 per program)
161. Electrician Pliers (20 per program)
162. Walk-in Floral Cooler (1 per program)
163. Display Cooler with Glass Doors (1 per program)
164. Cooler Buckets (20 per program)
165. Electronic Cash Register with Cash Drawer Capabilities (1 per program)

INSTRUCTIONAL AIDS

1. TV Monitor (1)
2. VCR (1)
3. Slide Projector (1)
4. Projector Carousel for Slides (1)
5. Lecturn (1)
6. AV Cart (1)
7. Computer Software for:
   - Landscape Design and Estimating
   - Irrigation Design and Estimating
   - Word Processing
   - Spread Sheets
   - Plant Materials
   - Greenhouse
   - Crop Estimating
   - Accounting
   - Landscape Maintenance
8. Floral Identification Slides
9. Video Out (Microcomputer to TV Monitor) (1)
10. Videos (Assorted)
11. Xerox Machine (w/color, collation, and reduction/enlargement capabilities) (1)
12. Stereoscopes (w/camera capabilities) (1)

VIDEOS

1. Designs
2. Displays
3. Specialty Design

RECOMMENDED TOOLS AND EQUIPMENT FOR LANDSCAPE MANAGEMENT TECHNOLOGY PROGRAMS

1. Plant Presses (12 per program)
2. Herbarian Sheets (500 per program)
3. Blotter Sheets (300 per program)
4. Plant Collection Storage Unit (4 per program)
5. Blue Print Machine with Ammonia Filter Unit (1 per program)
6. 5 Drawer Flat File Storage (2 per program)
7. Drafting Table - 36" X 48" min. with plan drawer and 3 tool drawers (20 per program)
8. Parallel Bars - 48" (20 per program)
9. Board Cover - 36" X 48" (20 per program)
10. Architect Drafting Table Lights (20 per program)
11. Drafting Chairs (20 per program)
12. Complete Drafting Set (1 per program)
13. Electric Eraser (1 per program)
14. Insect Boxes (15 per program)
15. Spreading Boards (15 per program)
16. 35 MM Camera with Flash and Various Lens (1 per program)
17. Tripod for 35 MM Camera (1 per program)
18. Riker Mount - Various Sizes (50 per program)
19. Insect Nets (12 per program)
20. Scale: 25 Pound Capabilities - Metric and Standard Weighing Scale (1 per program)
21. Sprayer - Backpack with Agitator (6 per program)
22. Sprayer Hand Held Pump/Pressure - 2½ gallon (6 per program)
23. Sprayer Siphon/Hose On (4 per program)
24. Sprayer Boom Type - Trailer Mount with 100 Gallon Tank (1 per program)
25. Color Multi-Pin Plotter (1 per program)
26. Markers (150 per program)
27. Colored Pencils (150 per program)
28. Electronic Planimeter (3 per program)
29. Measuring Wheel (3 per program)
30. Tape Measure - 25' X 1" Steel Tape (12 per program)
31. Tape Measure - 100 Fiberglass (6 per program)
32. Tape Measure - 200 Fiberglass (6 per program)
33. Automatic Level (1 per program)
34. Tripod for Level (1 per program)
35. Philadelphia Rod - 1/10ths (1 per program)
36. Paint Stick - Long (2 per program)
37. Paint Stick - Short (2 per program)
38. Marking Paint (6 cases per program
39. Stereoscopes without Camera Capabilities (6 per program)

40. Computer with Mouse, CD Rom, Modem, and Fax Capabilities (1 per program)
41. Computers w/CD-ROM, Mouse (12 per program)
42. 17" Monitor (13 per program)
43. Color Laser Printer (6 per program)
44. Tractor - min. 26 HP (1 per program)
45. Measuring Cups - Assorted Sizes in Plastic, Glass, and Stainless (24 per program)
46. Beakers - Various Sizes (24 per program)
47. Measuring Spoons - Various Sizes (24 sets per program)
48. Utility Vehicle (1 per program)
49. Box Blade for Tractor (1 per program)
50. Front End Loader (1 per program)
51. 48" Grooming Mower Attachment for Tractor (1 per program)
52. 48" Reel Riding Mower (1 per program)
53. 48" Rotary Riding Mower (1 per program)
54. Walk Behind Reel Mower - 22" (1 per program)
55. Walk Behind Rotary/Self Propelled - 36" (1 per program)
56. Commercial String Trimmer - 32 cc min. (6 per program)
57. Commercial Stick Edger - 32cc min. (4 per program)
58. Commercial Backpack Blower (4 per program)
59. Walk Behind Power Bed Edger (1 per program)
60. Hand Held Blower (2 per program)
61. Push Brooms with Extra Handles (6 per program)
62. Garden Hoes (6 per program)
63. Spreaders - Cyclone/Broadcast (3 per program)
64. Spreaders - Drop Spreaders (1 per program)
65. Spreaders - Tractor Mount (1 per program)
66. Top Dresser - Self Contained (1 per program)
67. Aerator - Self Propelled (1 per program)
68. Sod Cutter (1 per program)
69. De-Tatcher (1 per program)
70. Verti-Cutter (1 per program)
71. Truck - V-8, Club Cab, Automatic, Dump Bed, Box Hitch, One Ton Min. (1 per program)
72. Trailer, Double Axle, 16' w/Ramp (1 per program)
73. 40' Chain (1 per program)
74. Chain Binders (4 per program)
75. Ratchet Straps (12 per program)
76. Sod Roller - Water Fill (1 per program)
77. Manual Grease Gun (3 per program)
78. Full Set of Metric Mechanics Tools - 500 pieces (1 per program)
79. Full Set of Standard Mechanics Tools - 500 pieces (1 per program)
80. Tool Boxes - Lockable with Casters (2 per program)
81. Bench Grinders - 3/4 HP (2 per program)

82. Bench Vise (6 per program)
83. Bench Work Tables - Wood/Steel Tops (6 per program)
84. Lapping Machine Sharpener for Reel Mower (2 per program)
85. Sprigging Machine (1 per program)
86. Hydro Seeder - 50 gallon tank (1 per program)
87. Shower Area for Containment of Chemicals (1 per program)
88. Deep stainless steel sink for equipment wash-up and floral design (4 per program)
89. Shovels - Round Point (12 per program)
90. Shovels - Square Point (6 per program)
91. Leaf Rake (12 per program)
92. Bow Rake (12 per program)
93. Landscape Rake - 36" (4 per program)
94. Landscape Rake - 24" (4 per program)
95. Water Hose - 3/4 X 100'/75' (24 per program)
96. Water Wands (6 per program)
97. Sprinklers - Various Types and Sizes (6 per program)
98. Nozzles - Various Types (6 per program)
99. Tamps (2 per program)
100. Ball Carts (2 per program)
101. Tree Carts (2 per program)
102. Wheel Barrow - Steel Tray/Plastic Tray (6 per program)
103. Nursery Carts (4 per program)
104. Tree Slings - Large and Small (1 each per program)
105. Complete Soil Test Kit (4 per program)
106. Soil Sampler (6 per program)
107. Soil Augers - 1 Power and 2 Manual (3 per program)
108. PH Meter and Soil Probe (6 per program)
109. Welders - Arc Welder (2 per program)
110. Cutting Torches (1 per program)
111. 50 Gallon Air Compressor/Industrial Hose and Attachment (1 per program)
112. Pneumatic Wrenches, Full Set (1 per program)
113. Air Tank, Portable (1 per program)
114. Gas Cans - 2½ gallon (12 per program)
115. Adding Machines (12 per program)
116. Tiller, Rear Tine (1 per program)
117. Tiller, Front Tine (1 per program)
118. Concrete Hoe (2 per program)
119. Mattock, Cutting and Digging (2 per program)
120. Railroad Pick (1 per program)
121. Chain Saw (1 per program)
122. Hand Saw (1 per program)
123. Pruning Shears (12 per program)
124. Loppers (6 per program)

125. Pole Pruner (4 per program)
126. Fertilizer Probe (6 per program)
127. Ladder - 24' Extension (1 per program)
128. Ladder, Step (8') (2 per program)
129. First Aid Kit (2 per program)
130. Drill - ½" Reversible (2 per program)
131. Disc Grinder, Portable (4") (2 per program)
132. Gas-Powered Hedge Trimmer (1 per program)
133. Electric-Powered Hedge Trimmer (1 per program)
134. Parts Washer (1 per program)
135. Pressure Washer (1 per program)
136. Voltage Meter (1 per program)
137. Flow Meter (1 per program)
138. Short Indicator Finder (1 per program)
139. Compression Coupling Wrenches (2 per program)
140. Wire Cutter/Stripper (6 per program)
141. Valve Wrenches - 4' (4 per program)
142. Trenching Shovels (4 per program)
143. Water Key (2 per program)
144. Zurn Key (2 per program)
145. Aerator-Tractor mounted (1 per program)
146. Turf roller (1 per program)
147. Spades (8 per program)
148. Scoops (4 per program)
149. 8½ inch circular saw (1 per program)
150. 10 inch compound miter saw (1 per program)
151. 15 inch compound miter saw (1 per program)
152. 1 inch jig saw (1 per program)
153. 3 inch belt sander (1 per program)
154. Finishing sander (1 per program)
155. Hand pruners (16 per program)
156. Floor model drill press (1 per program)
157. 4 foot level (2 per program)
158. Climbing saddles (4 per program)
159. Safety lanyard (4 per program)
160. Rope, Climbing (500') (1 per program)
161. Grinder, Reel (1 per program)
162. Bed knife grinder (1 per program)

INSTRUCTIONAL AIDS

1. TV Monitor (1)
2. VCR (1)
3. Slide Projector (1)
4. Projector Carousel for Slides (1)

5. Lecturn (1)
6. AV Cart (1)
7. Computer Software for:
   Landscape Design and Estimating
   Irrigation Design and Estimating
   Word Processing
   Spread Sheets
   Plant Materials
   Greenhouse
   Crop Estimating
   Accounting
   Landscape Maintenance
8. Floral Identification Slides
9. Video Out (Microcomputer to TV Monitor) (1)
10. Videos (Assorted)
11. Xerox Machine (w/color, collation, and reduction/enlargement capabilities) (1)
12. Stereoscopes (w/camera capabilities) (1)

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.

M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.

M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.

M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.

M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.

M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.

M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.

M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.

M5.03 Explore transformations of geometric figures.

M5.04 Understand and apply geometric properties and relationships.

M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.

M6.02 Construct, read, and interpret tables, charts, and graphs.

M6.03 Develop an appreciation for statistical methods as powerful means for decision making.

M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE
FOR HORTICULTURE TECHNOLOGY

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Plant Materials I (HLT 1114)

_____ 1. Demonstrate an understanding of identifying and classifying plant materials.

Horticulture Principles (HLT 1222)

_____ 1. Demonstrate the ability to solve mathematical exercises related to the landscape/horticulture industry.
_____ 2. Prepare and complete the necessary processes and forms for job placement.
_____ 3. Describe and discuss current events in the Green Industry.

Plant Materials II (HLT 1124)

_____ 1. Demonstrate an understanding of identifying and classifying plant materials.

Landscape Design I (HLT 1513)

_____ 1. Demonstrate the use of drawing instruments and supplies used in the preparation of landscape plans.
_____ 2. Describe and illustrate site inventory and analysis processes and elements and principles of design.

Ornamental and Turf Pest Management (HLT 2813)

_____ 1. Describe and explain the different types of insects associated with landscape and horticulture plant material.
_____ 2. Describe and explain the different types of disease common to ornamental and turf plants.
_____ 3. Describe control methods for insects and disease management.

Landscape Maintenance and Weed Control (HLT 2124)

_____ 1. Describe the scope of landscape maintenance.
_____ 2. Identify the proper method and timing of pruning operations for specific trees and shrubs.
_____ 3. Explain the laws and regulations governing licensure.
_____ 4. Describe the different types of weeds and herbicides.
_____ 5. Develop a one-year maintenance schedule for residential and commercial applications.

Greenhouse and Nursery Production I (HLT 1313)

_____ 1. Contrast the types of structures, locations, and equipment used in the greenhouse industry.
_____ 2. Explain the process of acclimation of plant materials.
_____ 3. Produce a plan to illustrate proper watering, lighting, and timing techniques.
_____ 4. Determine principles of media selection.
_____ 5. Formulate a seeding schedule.
_____ 6. Prepare and complete production schedule for a spring crop.
_____ 7. Examine seasonal re-plantings of nursery and greenhouse plant materials.
_____ 8. Create appropriate merchandising strategies for crop production.

Applied Principles of Plant Propagation (HLT 1213)

_____ 1. Describe vegetative plant reproduction.
_____ 2. Emphasize seed scarification and stratification techniques.
_____ 3. Demonstrate concepts involved in grafting and budding.
_____ 4. Demonstrate concepts involved in layering techniques.
_____ 5. Describe the symptoms of damping off and identify chemical and cultural methods for control.

Greenhouse and Nursery Production II (HLT 2323)

_____ 1. Prepare a complete production schedule for a fall crop.
_____ 2. Examine fertilization principles.
_____ 3. Calculate and use growth regulators.
_____ 4. Identify pest and pest management procedures.
_____ 5. Recognize lighting concepts for crop production.
_____ 6. Evaluate nursery production techniques and methods.

Landscape Equipment Operation and Maintenance (HLT 1614)

_____ 1. Demonstrate proper maintenance, handling, and storage of landscape maintenance equipment.
_____ 2. Describe basic first aid and safety precautions for using landscape maintenance equipment.
_____ 3. Demonstrate safe and proper operation of landscape maintenance equipment.
_____ 4. Demonstrate maintenance of two- and four-stroke gasoline engines.

Floral Design (HLT 1413)

_____ 1. Explain the uses of different pieces of equipment and supplies used in floral design.
_____ 2. Explain the use of cut flowers and other plant materials used in floral design.
_____ 3. Examine floral preservation techniques.
_____ 4. Create floral designs in commercially applicable styles.
_____ 5. Illustrate a knowledge of practical delivery.
_____ 6. Explain floral wire capabilities.

Garden Center Management (HLT 2513)

_____ 1. Describe the business principles associated with acquiring, organizing, and operating a garden center.
_____ 2. Explain the concepts necessary to build a garden center business to include choosing a location, merchandising and promotion techniques, facilities maintenance and public relations.
_____ 3. Design a profitable financial management system.

Landscape Construction (HLT 2713)

_____ 1. Develop a plan for sequencing and timing the different events and operations required for a landscape installation job.
_____ 2. Discuss drainage problems in the landscape.
_____ 3. Explain state regulations required to obtain a landscape gardener's license.

Landscape Design II (HLT 2523)

_____ 1. Describe and illustrate basic planting design techniques.
_____ 2. Demonstrate the use of computer software used in the preparation of landscape plans and drawings pertaining to the Green Industry.

Leadership Management (HLT 1411, HLT 1421, HLT 1431, HLT 1441)

_____ 1. Formulate personal educational and professional goals and develop a plan to accomplish those goals.

Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)]

_____ 1. Prepare a training agreement.
_____ 2. Prepare and submit written reports of the supervised experience.
_____ 3. Follow written guidelines for work experience programs.

Work-Based Learning in Horticulture/Landscape Management Technology [HLT 292(1-6)]

_____ 1. Prepare a written agreement.
_____ 2. Prepare a written report of activities.
_____ 3. Follow written guidelines for work experience programs.
_____ 4. Apply and practice positive work habits and responsibilities.
_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
_____ 6. Assess accomplishment of objectives.
_____ 7. Utilize a set of written guidelines for the work-based learning program.

STUDENT COMPETENCY PROFILE
FOR LANDSCAPE MANAGEMENT TECHNOLOGY

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Plant Materials I (HLT 1114)

_____ 1. Demonstrate an understanding of identifying and classifying plant materials.

Horticulture Principles (HLT 1222)

_____ 1. Demonstrate the ability to solve mathematical exercises related to the landscape/horticulture industry.
_____ 2. Prepare and complete the necessary processes and forms for job placement.
_____ 3. Describe and discuss current events in the Green Industry.

Plant Materials II (HLT 1124)

_____ 1. Demonstrate an understanding of identifying and classifying plant materials.

Landscape Design I (HLT 1513)

_____ 1. Demonstrate the use of drawing instruments and supplies used in the preparation of landscape plans.
_____ 2. Describe and illustrate site inventory and analysis processes and elements and principles of design.

Ornamental and Turf Pest Management (HLT 2813)

_____ 1. Describe and explain the different types of insects associated with landscape and horticulture plant material.
_____ 2. Describe and explain the different types of disease common to ornamental and turf plants.
_____ 3. Describe control methods for insects and disease management.

Landscape Maintenance and Weed Control (HLT 2124)

_____ 1. Describe the scope of landscape maintenance.
_____ 2. Identify the proper method and timing of pruning operations for specific trees and shrubs.
_____ 3. Discuss the laws and regulations governing licensure.
_____ 4. Describe the different types of weeds and herbicides.
_____ 5. Develop a one-year maintenance schedule for residential and commercial applications.

Landscape Equipment Operation and Maintenance (HLT 1614)

_____ 1. Demonstrate proper maintenance, handling, and storage of landscape maintenance equipment.
_____ 2. Describe basic first aid and safety precautions for using landscape maintenance equipment.
_____ 3. Demonstrate safe and proper operation of landscape maintenance equipment.
_____ 4. Demonstrate maintenance of two- and four-stroke gasoline engines.

Garden Center Management (HLT 2513)

_____ 1. Describe the business principles associated with acquiring, organizing, and operating a garden center.
_____ 2. Explain the concepts necessary to build a garden center business to include choosing a location, merchandising and promotion techniques, facilities maintenance and public relations.
_____ 3. Design a profitable financial management system.

Landscape Construction (HLT 2713)

_____ 1. Develop a plan for sequencing and timing the different events and operations required for a landscape installation job.
_____ 2. Discuss drainage problems in the landscape.
_____ 3. Explain state regulations required to obtain a landscape gardener's license.

Landscape Design II (HLT 2523)

_____ 1. Describe and illustrate basic planting design techniques.
_____ 2. Demonstrate the use of computer software used in the preparation of landscape plans and drawings pertaining to the Green Industry.

Turfgrass Management (HLT 2113)

_____ 1. Discuss the role of turfgrass and its importance in the Green Industry.
_____ 2. Describe the steps to establish turfgrass.
_____ 3. Describe the maintenance procedures to manage a healthy turf.
_____ 4. Discuss golf course design and management.

Landscape Business Management (HLT 2313)

_____ 1. Discuss entrepreneurship opportunities in the Green Industry.
_____ 2. Demonstrate proper record keeping procedures associated with business ownership.
_____ 3. Describe procedures and techniques for hiring and retaining employees.
_____ 4. Describe the steps in developing and submitting a bid.

Irrigation and Lighting Systems (HLT 2824)

_____ 1. Describe the basic components of an irrigation system.
_____ 2. Describe and discuss the general design of an irrigation system.
_____ 3. Calculate the cost estimate of a simple irrigation system.
_____ 4. Describe the methods and procedures to follow in the installation of an irrigation system.
_____ 5. Discuss the procedures to follow and the equipment to be used in maintaining an irrigation system.
_____ 6. Describe the types and basic components of outdoor lighting.
_____ 7. Discuss the design of a lighting system.
_____ 8. Calculate cost estimate of an outdoor lighting system.
_____ 9. Describe methods in the installation of an outdoor lighting system.
_____ 10. Discuss the procedures to follow and the equipment to be used in maintaining a lighting system.

Special Problem in Horticulture/Landscape Management Technology [HLT 291(1-3)]

_____ 1. Prepare a training agreement.
_____ 2. Prepare and submit written reports of the supervised experience.
_____ 3. Follow written guidelines for work experience programs.

Work-Based Learning in Horticulture Landscape Management Technology [HLT 292(1-6)]

_____ 1. Prepare a written agreement.
_____ 2. Prepare a written report of activities.
_____ 3. Follow written guidelines for work experience programs.
_____ 4. Apply and practice positive work habits and responsibilities.
_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
_____ 6. Assess accomplishment of objectives.
_____ 7. Utilize a set of written guidelines for the work-based learning program.

Leadership Management (HLT 1411, HLT 1421, HLT 1431, HLT 1441)

_____ 1. Formulate personal educational and professional goals and develop a plan to accomplish those goals.